NETWORK WORLD

The Newsweekly of User Networking Strategies Volume 5, Number 47 November 21, 1988

Users could lose in telco tariff fight

By Barton Crockett
Senior Writer

AUSTIN, Texas — AT&T and a local carrier here are embroiled in a potentially precedent-setting legal battle that could inflate the prices users pay for third-party design and management of private networks.

The conflict involves a private net AT&T installed for the state of Texas in September.

AT&T won the contract, in part, by proposing a private network capable of carrying long-distance traffic and dumping it into the local exchange using standard local access lines.

But Southwestern Bell Corp. refused to give AT&T these lines and instead required the carrier to enter the local exchange using more expensive carrier access facilities. Under protest, AT&T installed the net using the expensive lines, but it vowed to take the issue up with the Texas Public Utilities Commission (PUC).

Late last month, AT&T made good on the promise and filed a formal complaint with the Texas PUC, located here. The commission will rule on the matter within the next several months.

If Southwestern Bell gets its way, analysts said, other local carriers may try to adopt similar

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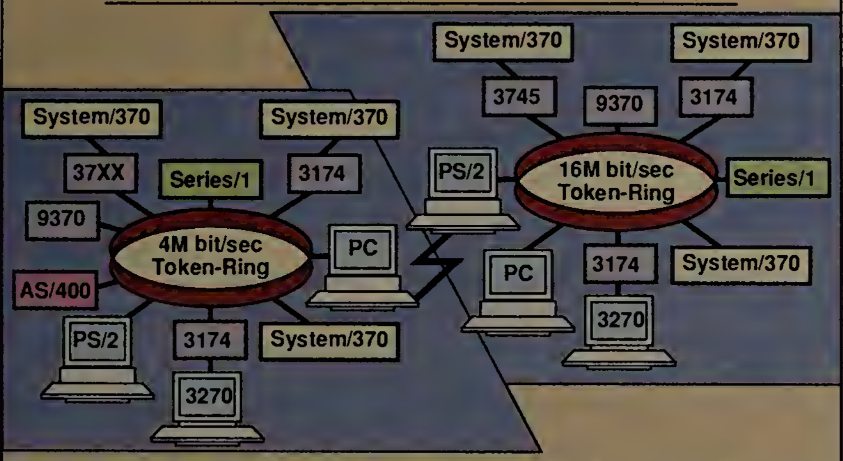
IBM's new Token-Ring landscape



After months of speculation, IBM last week unveiled a 16M bit/sec version of its Token-Ring Network. The new version and the existing 4M bit/sec Token-Ring support a range of IBM devices, from PCs to hosts. IBM also unwrapped bridging products that link both 4M and 16M bit/sec local nets, either locally or remotely, over dedicated lines.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: IBM, RYE BROOK, N.Y.

IRS, others profit from Electronic Filing System

Less taxing return procedure cuts costs and time, offers new opportunities for tax preparers.

By Paul Desmond
Staff Writer

COVINGTON, Ky. — The Internal Revenue Service's Electronic Filing System (EFS) is cutting IRS overhead and enabling companies that prepare tax returns to expand business and increase profits by giving taxpayers faster refunds.

EFS, which began in three states in 1986 and will expand to 36 states next year, is expected to save the IRS $200 million over the next decade by slashing the cost of handling and storing tax returns. It will also generate millions of dollars in new revenue for the data transmission providers and tax preparers that market the service to taxpayers.

Next year, tax preparers in 48 IRS districts will use EFS to transmit clients' 1988 individual tax returns to IRS service centers here and in Ogden, Utah.

This year, more than 583,000 1987 returns were electronically filed from the 10 states where EFS was available, the IRS said.

EFS cuts up to three weeks off

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Comdex hosts debut of 16M Token-Ring

IBM lays rumors to rest with the introduction of higher speed local net, new bridging products.

By Laura DiDio
Senior Editor

LAS VEGAS — IBM used Comdex/Fall '88 here to introduce the long-awaited 16M bit/sec version of its Token-Ring Network.

Analysts hailed the high-end local net as technically elegant and predicted that it will be used as a backbone to tie lower speed 4M bit/sec Token-Rings and to support bandwidth-intensive applications such as graphics.

Introduction of the higher speed network had been expected for months ("IBM readies 16M bit/sec Token-Ring for fall debut," *NW,* July 11).

Products announced with the network include personal computer network interfaces that support either 16M or 4M bit/sec Token-Rings, as well as network interfaces for the IBM 3174 cluster controller and the 3745 front-end processor.

Adapters were also announced for IBM's 9370 and Series/1 minicomputers, but not the newer Application System/400 (AS/400). A bridge program released last week will let users link 16M and 4M bit/sec nets locally and remotely.

"The market needs the 16M bit/sec Token-Ring right now — not to connect PCs but to establish front-end-processor-to-[CPU] connections across the ring," said Frank Dzubeck, presi-

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More news on Comdex '88: See stories on pages 2 and 8.

SQL takes on key role in local nets

By Jim Brown
New Products Editor

LAS VEGAS — Last week's Comdex/Fall '88 highlighted the growing importance of shared SQL data base management systems for local networks and the emergence of applications designed to work with them.

At the show, vendors such as Microsoft Corp., Ashton-Tate Corp. and Oracle Corp. demonstrated local network DBMSs based on the ANSI-standard SQL. They also laid out plans for encouraging software developers to build microcomputer applications that work with the DBMSs. Those applications would include such things as spreadsheets, accounting packages and report generators.

Vendors, including IBM, are moving toward a client-server approach for local network data

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NOVELL USES COMDEX to introduce a gateway that links nearly 100 PCs to mainframes under SNA. Page 2.

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BANKING ON SECURITY, Merrill Lynch buys an interest in network security firm Micronyx. Page 6.

CHOOSING THE RIGHT premises wiring system can be more of a management problem than a technical one. Page 28.

NEWSPAPER

FEATURE

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Complex networks call for standardized wiring

Smart managers make it easy on themselves with integrated, consistent cable schemes.

By John Carosella
and Fred McClimans
Special to Network World

MANAGEMENT UPDATE

For net managers, getting wired involves much more than too little sleep or too much caffeine. As telecommunications systems have increased in both complexity and number, so too have the requirements for complex and complete building wiring systems.

Gone are the days when wiring systems were "voice only" and data devices simply required point-to-point links. Today's communications managers are seeking wiring systems that satisfy building-wide network needs, including total support for multiple-vendor voice and data systems, onetime installation of wiring components, ease of equipment moves and changes, and simple

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Novell stages introduction of gateway at Comdex '88

NetWare SNA Gateway links up to 97 micros to mainframes under SNA, runs on a PC or PS/2.

By Jim Brown
New Products Editor

LAS VEGAS — At last week's Comdex/Fall '88 show here, Novell, Inc. introduced a gateway that links up to 97 local network-attached microcomputers to IBM mainframes in a Systems Network Architecture net.

The NetWare SNA Gateway product was developed by Novell's recently reorganized Communications Products Division.

The gateway software runs on an IBM Personal Computer or Personal System/2 running Advanced NetWare or NetWare System Fault Tolerant Version 2.1 network operating system software. The company also released NetWare SNA Gateway Entry Level System (ELS), a version of the gateway designed for users of Novell's ELS networking software.

The products replace the PCOX/GW-3270 SNA gateway Novell has sold since it acquired the product's manufacturer, CXI, Inc., nearly two years ago.

The gateway software can be configured to support any of five different microcomputer-to-mainframe connection options. Users can link the gateway microcomputer outfitted with an IBM Token-Ring Network adapter directly to the Token-Ring port on a front-end processor or cluster controller. The Token-Ring connection can support as many as 128 concurrent terminal sessions.

Using Novell's Synchronous Adapter or IBM's Multiprotocol Adapter/A board, the gateway will support as many as 16 concurrent terminal sessions over a remote IBM Synchronous Data Link Control circuit operating at up to 19.2K bit/sec.

Used with a Novell Synchronous/HS adapter, the gateway will support up to 128 concurrent remote terminal sessions via a 56K bit/sec SDLC link.

The gateway will also support five terminal sessions when connected to a local cluster controller via a Novell Coax Adapter or IBM 3278/9 Adapter. Novell's CoaxMux adapter, which supports connection to an IBM 3299 multiplexer port on IBM's 3174 cluster controller, enables the gateway to support 40 concurrent terminal sessions.

NetWare SNA Gateway ELS can be configured for a remote SDLC link operating at up to 19.2K bit/sec supporting 16 terminal sessions or a coaxial link to a local cluster controller supporting five terminal sessions.

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AT&T gives users a look at merged System 75/85

Prototype PBX bows at joint users group meet.

By Bob Wallace
Senior Editor

ST. LOUIS — AT&T demonstrated a working prototype of a private branch exchange that combines features of its System 85 and System 75 switches to 1,000 customers at a recent meeting here.

The prototype, shown to AT&T's three major users groups, is the fruit of a yearlong AT&T effort to merge its PBXs to capitalize on the technological merits of both switches and to help users protect their investments.

Users said they were pleased to see evidence of AT&T's effort to merge the two digital PBXs but they still want compatibility questions and pricing details settled.

The switch was shown at the first combined meeting of the System 85 Users Group, the National System 75 Users Group and the Electronic Tandem Network (ETN) Users Group.

AT&T had originally announced that it would gradually merge its mid-range System 75 and its top-of-the-line System 85 in a public statement of direction issued in October 1987 ("AT&T plans merge of Systems 75/85," *NW,* Oct. 19, 1987). AT&T said the move would enable it to consolidate its PBX product line, a move that analysts say was necessitated by competition.

"Having two different PBX product lines has hurt sales of AT&T switches," according to Ian Angus, president of Angus Tele-Management Group, Inc., a Pickering, Ont.-based consulting and research firm. "Users feel uneasy about buying a switch that cannot be easily expanded."

The System 75 currently supports 40 to 800 lines, while the System 85 can handle 400 to 32,000 lines, according to an AT&T spokeswoman. The System 85 can be equipped with options such as an Integrated Services Digital Network Primary Rate Interface or a redundant processor. These options are not available with the System 75.

The merged System 75/85 will support a common feature set. "We incorporated the best

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Briefs

AT&T cut off. AT&T's main Eastern Seaboard fiber route was knocked out of service Friday, leaving an unspecified number of business and residential customers without long-distance calling services.

An AT&T spokesman said the fiber cable was cut at 12:15 p.m. in a railway yard between Jamesburg and South Amboy, N.J. The high-capacity fiber carries both switched and private-line traffic among Eastern Seaboard cities.

"We don't know what happened, and we have absolutely no idea how many businesses or residences have been affected by the cable failure," the spokesman said.

AT&T dispatched technicians to the site to begin splicing the cable. "We expect to have all service restored by 6 p.m.," the spokesman said.

LAN Manager, LAN Server united. Microsoft Corp. hosted a multivendor network demonstration at Comdex/Fall '88 in Las Vegas last week designed to show how its OS/2 LAN Manager can interoperate with IBM's OS/2 LAN Server local network operating system. (IBM also announced that LAN Server shipments are planned for Nov. 30.) Fourteen vendors took part in the demonstration, with some 60 machines linked to the network.

Questions about compatibility between LAN Manager and LAN Server apparently were laid to rest by the demonstration. Those questions arose when IBM licensed LAN Manager last year. At that time, the company indicated it might not implement all of LAN Manager's features. While stopping short of full compatibility, the Comdex demonstration showed that the two products can coexist on the same network.

Microsoft has said that it expects six versions of LAN Manager to ship before the end of this year and another dozen to become available during the first half of 1989.

Hardware used in the demonstration included IBM Personal Computers and Personal System/2s running OS/2 and DOS; Apple Computer, Inc. Macintoshes; Sun Microsystems, Inc. workstations; Digital Equipment Corp. VAXes; and Unix systems from Hewlett-Packard Co. and AT&T. Network media included Token-Ring, Arcnet and Starlan.

3Com Corp., Ungermann-Bass, Inc., Torus Systems, Inc., NCR Corp., Tiara Computer Systems, Inc., Interlan, Inc. and Digital Communications Associates, Inc. were among the other firms that participated in the demonstration.

Although all of the systems were attached to an Ethernet backbone, the demonstration was not really a look at heterogeneous networking. Not all the equipment could share files or hardware resources because some of the vendors' LAN Manager-based products are still under development.

Northern Telecom slims down. Northern Telecom, Inc. last week eliminated about 250 middle-management jobs as part of a restructuring of its Integrated Network Systems Group.

The job cuts primarily affected staff at Northern Telecom's facilities in Research Triangle Park, N.C. About 200 staff positions were eliminated, while the other 50 cuts were spread around the U.S., the spokesman said.

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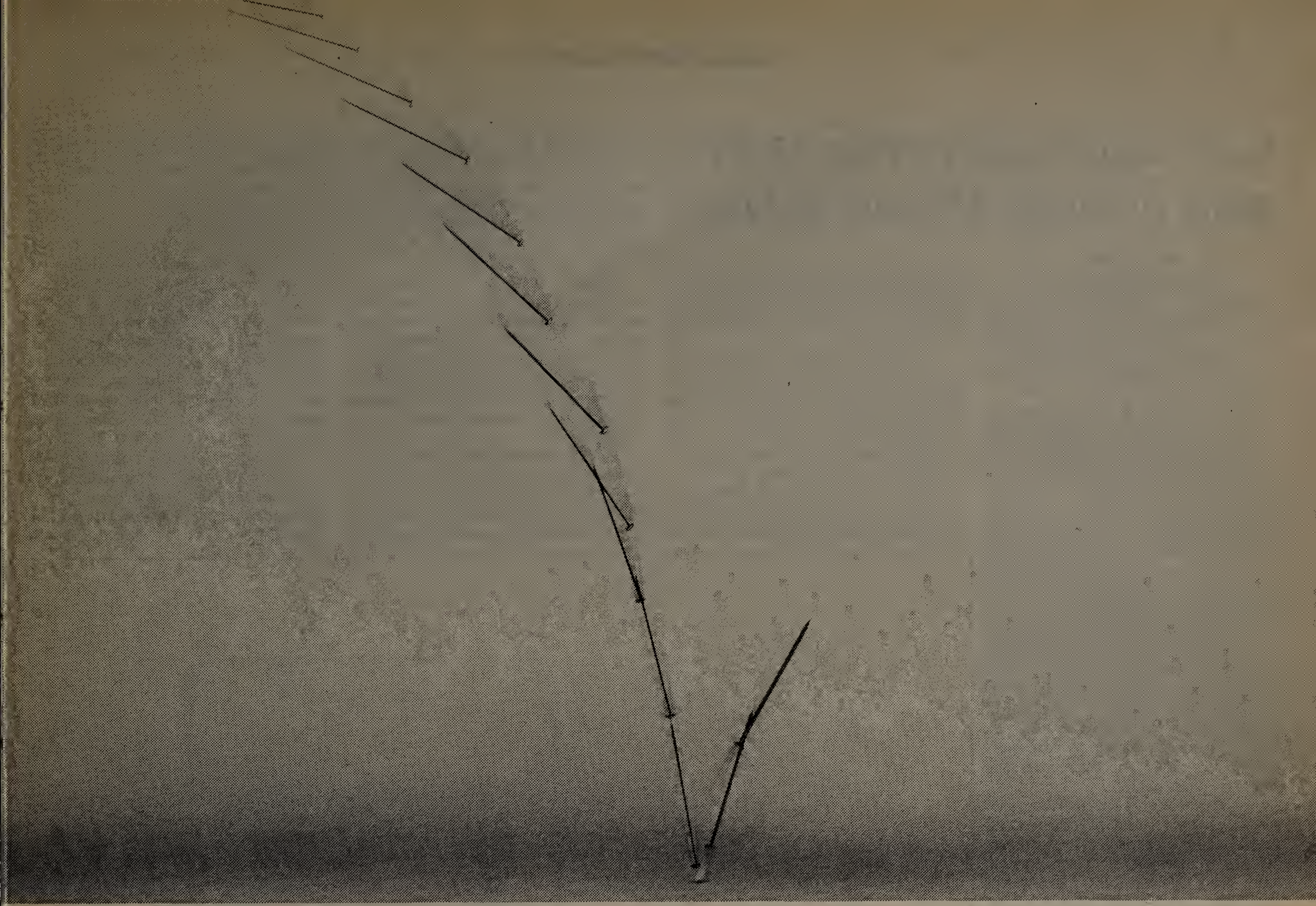

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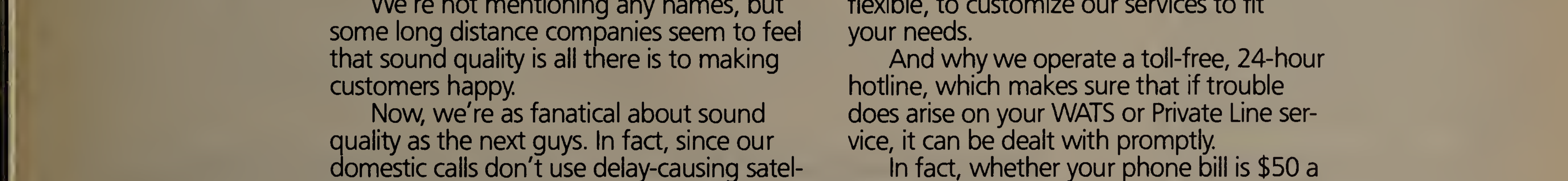

COMMUNICATIONS
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Users voice concern that AT&T plans to merge ISN and Datakit

By Bob Wallace
Senior Editor

NEW YORK — AT&T's plan to support the functions of its Information Systems Network (ISN) in a new version of its Datakit virtual circuit switch has ISN users worried that ISN may eventually disappear as a product.

ISN and Datakit are data networking systems sold and supported by different divisions of AT&T. ISN is used by corporations to build private networks. The Datakit virtual circuit switch is used by telephone companies to support data services such as central office local networks.

The two products are based on strikingly similar technology, employing an internal high-speed backplane bus that routes data among attached devices.

Sources within and outside AT&T said the company will support ISN functions through add-on customer premises equipment to be offered as part of Datakit II Virtual Circuit Switch (VCS), a new version of Datakit expected to be unveiled this week ("AT&T Datakit II due out by year end," *NW,* Oct. 31). Over time, the sources said, AT&T will phase out ISN.

"There will be a great deal of money invested in Datakit II [VCS] over the next few years. But there will not be any significant investment made in ISN," a source within AT&T said. "All the features that differentiate ISN from Datakit are included in Datakit II VCS. And that was planned."

AT&T could save money by consolidating parallel research and development, manufacturing, marketing, sales and support efforts, according to industry analysts familiar with the two products.

Datakit II VCS is a more flexible version of the virtual circuit switch. It will support Ethernet and Starlan local network bridging, several new host interfaces and synchronous data transmission — communications options already available with ISN.

AT&T raised the issue of merging ISN and Datakit at a meeting last month of the Network Users Group-ATT (NUGATT) at George Washington University in Washington, D.C., according to users who attended the meeting.

"They briefly mentioned merging ISN and Datakit, but did not go into detail," according to NUGATT founder Stephen Patrick, acting director of general services for the University of Wisconsin at Stevens Point. This worried ISN users who had not been briefed on the Datakit II VCS strategy, he said.

Analysts said it would make good business sense for AT&T to merge ISN and Datakit and their related support operations.

"Depending on how you want to look at the situation, one or the other is redundant in the marketplace," said David Terrie, president of NewPort Consulting, a Scituate, Mass.-based consulting firm specializing in local networks.

Datakit was created by AT&T Bell Laboratories in 1983 for use by telephone companies. It is currently marketed, sold and supported by AT&T's Network Systems Group.

ISN was developed by American Bell, Inc., a predivestiture AT&T equipment sales group. AT&T's Data Systems Group markets, sells and supports the product. An estimated 1,700 companies, organizations and schools use ISN.

In a prepared statement, Robert Donnelly, ISN product manager for AT&T's Data Systems Group, said his group has no plans to merge the two networks but added, "AT&T is always looking at ways to increase integration and interoperability between products."

An AT&T Network Systems Group spokesman would neither confirm nor deny plans to merge Datakit and ISN. "The Datakit product line and ISN serve different customer sets," he said.

But he added, "The product development people are cooperating."

ISN users told *Network World* that the future of ISN is unclear and expressed concern that they may be forced to move to Datakit II VCS. "AT&T talks about merging the two but says little more," said one large ISN user who attended the NUGATT meeting and requested anonymity. "When AT&T talked about moving away from ISN to Datakit, a lot of ISN users — myself included — got real nervous."

University of Wisconsin's Patrick said he is looking to AT&T to protect the school's investment in ISN hardware and software. "I'm not concerned with what name they slap on [the successor product] as long as it's compatible with ISN, does the same things as ISN and doesn't require any substantial investment in new equipment," he said.

The AT&T source said the company will support both Datakit II VCS and ISN for now but will shift funding and other development resources from ISN to Datakit II VCS. "ISN will still be sold and supported, and parts will still be available," the source said. "We are not going to strand any ISN users. There will be a graceful migration to Datakit II [VCS]."

The unnamed ISN user said senior AT&T Data Systems Group planners told him that a great deal of development work had already been shifted from ISN to Datakit II VCS. The AT&T source said AT&T's Data Systems Group needs to do a better job explaining to its customers the issue of migration to Datakit II VCS. "[The Data Systems Group] has to face up to the fact that they have to deal with their ISN customers and their transition to Datakit II [VCS]," he said.

"They have had trouble facing up to this fact," the source within AT&T said. "And, as a result, they are giving their customers the impression that they don't care about them."

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An IBM researcher invented dynamic random access memory (DRAM), the most widely used computer memory technology. DRAM

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FCC gives tentative nod to ONA plans amid flurry of controversy

Enhanced service firms say access charges may reappear.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — The Federal Communications Commission last week tentatively approved the RBHCs' Open Network Architecture (ONA) plans, but the decision was overshadowed by concern that the commission is attempting to impose access charges on enhanced service providers through the ONA framework.

After months of controversy, the FCC announced its decision at an open meeting during which staff members briefly outlined a 250-page order on ONA. The full text of the order is not expected to be released for at least a month.

While the FCC gave general approval to the ONA plans filed in February, the agency ordered the regional Bell holding companies to make revisions that address some key concerns about the plans. The revisions are designed to ensure uniformity of services and deployment schedules, as well as common names for ONA components such as basic service arrangements (BSA) and basic service elements (BSE). They are also aimed at expanding the number of services available in all seven regions and preventing RBHC personnel from unfairly using customer-proprietary network information for their enhanced service operations. Revisions are due May 19, 1989.

The agency approved an ONA model that breaks services into underlying connections, or BSAs, and enhanced features, or BSEs. The FCC said the RBHCs had done an acceptable job of identifying ONA services that can be offered in the short term.

ONA is one of the major requirements of the FCC's Third Computer Inquiry, which would allow the RBHCs to provide enhanced services through their telephone network operations rather than through separate subsidiaries. It requires that competing enhanced service providers be given equal access to basic and enhanced services and be permitted to purchase services on an unbundled basis. Currently, many advanced telecommunications features are bundled into packages that include more features, at a higher cost, than an enhanced service provider might need.

A number of users and enhanced service providers said the commission order is a good first step toward finalizing ONA but that much work remains. However, they were concerned about the FCC's intentions regarding access charges for enhanced service providers.

An FCC move last year to impose access charges, similar to those paid by interexchange carriers, on enhanced service providers was abandoned in April after the agency drew sharp criticism from users, enhanced service providers and Congress. Opponents claimed that access charges could double or triple the cost of enhanced services such as data base retrieval, videotex and voice messaging.

But the specter of access charges appeared again in connection with ONA after BellSouth Corp. proposed in its ONA filing that enhanced service providers not be allowed to continue using standard business lines. Under BellSouth's plan, the companies would be required to purchase services through special enhanced service provider tariffs. A number of enhanced service providers complained to the FCC that these tariffs were tantamount to access charges since the companies would likely be charged higher rates than other users for ONA services.

At the meeting, Gerald Brock, chief of the Common Carrier Bureau, said the FCC would not use the ONA proceeding to impose access charges on enhanced service providers. Currently, enhanced service providers are exempt from federal access charges because they are allowed to purchase access arrangements through state tariffs, he said. Although the FCC will require the RBHCs to offer ONA services through federal tariffs, the commission will continue to allow enhanced service providers to purchase services through state tariffs. However, in order to determine how the FCC will treat access tariffs, Brock said the agency will initiate a separate rule-making.

A spokesman for Telenet Communications Corp. said officials at the company are worried about the FCC's intentions on access charges. In a prepared statement, Telenet said, "We fear that the [FCC] may seek to apply interstate carrier access charges to ONA services."

Brian Moir, general counsel for the International Communications Association, also expressed concern about access charges, saying, "It's quite clear that the leadership of the commission had little or no desire to talk about what they intend to do in the rule-making proceeding."

If access charges are assessed on federal ONA tariffs, then enhanced service providers and private net users purchasing services will pay the higher rates, he said.

Concerns about access charges were also expressed by FCC Commissioner Patricia Diaz-Dennis.

In a written statement issued during a press conference following the FCC meeting, Diaz-Dennis said, "Until today, federal carrier access charges for enhanced service providers was a dead issue." While she did not state explicitly that the FCC would attempt to institute access charges for ONA, she did say, "Those who would impose access charges on [enhanced service providers] bear a heavy burden of showing what has changed since earlier this year [when the FCC voted not to impose such charges.]" ◻

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Merrill Lynch buys into vendor of network security products

By John Cox
Senior Editor

NEW YORK — Amid growing concern about network security, Merrill Lynch & Co., Inc. recently announced that it purchased an interest in a company whose security products will be installed on networked microcomputers at Merrill Lynch headquarters here.

The brokerage firm acquired a minority equity interest in privately owned Micronyx, Inc. of Richardson, Texas. Merrill Lynch declined to release details of the investment.

Merrill Lynch will also implement Micronyx products that control and monitor access to individual microcomputers on a local network and other computing resources accessible through the local net. That type of security is especially valuable to Merrill Lynch, which uses personal computer local nets linked in a wide-area net to other computers at company data centers.

"More and more processing takes place outside the data center on workstations connected to wide-area networks, to data centers and to one another," said Bruce Hasenyager, first vice-president and director of corporate MIS for Merrill Lynch. "We saw a need for extending our [data center] security umbrella to include distributed processing. Micronyx products make that possible.

"It's all the interconnections that create the [security] problems," he said. "The solution is to control access to the workstation. Then you can internally control who can do what with what."

Merrill Lynch is still deciding which Micronyx products to buy, he said. The firm is likely to rely heavily on the entry-level product Triumph!, which uses software and an electronic key to control access to IBM Personal Computer ATs and XTs. Where the company needs to protect especially sensitive information, it will employ Micronyx's Trispan, which uses a plug-in expansion board that supports a higher level of protection.

At Merrill Lynch headquarters, where the Micronyx products will be used first, the company's Personal Computers are attached to a variety of local networks.

The company's decision to use the Micronyx products capped a yearlong study of microcomputer security products. The goal of that study was to find a way to secure the company's proliferating microcomputers, local networks and, ultimately, the wide-area links from those nets to the mainframes, Hasenyager said.

Micronyx products protect workstations and their data in two ways, Hasenyager said.

First, the products use a unique electronic key for each user. The key must be inserted into a receptacle attached to the computer's backplane. Then the Micronyx software prompts the user for a password. After the software authenticates each step, the user can log on to the computer.

Second, the products encrypt every file that users create on their workstations. Network administrators can decide which users will have access to these encrypted files no matter where they are stored: on the microcomputer, on a local net server or even on a mainframe virtual disk.

Micronyx lets the network administrator control access to files, applications, network resources such as servers and gateways, and resources within the workstation, such as the hard disk and parallel printer port. "You have almost complete control over what the user can do," Hasenyager said.

The way Micronyx achieves this protection is what makes its approach unique, said Mark Goode, Micronyx president.

There is a protected security kernel at the heart of the Micronyx products. According to Goode, other microcomputer security packages are vulnerable because their kernel can be accessed and modified or destroyed, often with a commercially available symbolic debugging program.

The Micronyx expansion board uses a hardware-based memory manager that protects the security kernel and its security features from tampering.

Many of these security features are implementations of the so-called Orange Book security guidelines developed by the National Computer Security Center, a division of the National Security Agency (NSA). The center evaluated Micronyx's Triad Plus, which comprises software and a plug-in board, and concluded that the product supported key security features specified by the Orange Book.

In addition, Micronyx creates a detailed audit of all workstation activity for each user. The information not only indicates attempts to breach security but also provides valuable information on how a company's workstations are being used.

Goode's father, George, a former NSA cryptologist, cofounded Micronyx with Robert Morris, now chief scientist with the National Computer Security Center. Ironically, it is Morris' son, Robert Jr., who has been identified as the creator of the Unix virus that disrupted thousands of systems on the Internet network three weeks ago.

That virus was benign, leaving files intact. Goode said Micronyx's products would not have protected against such a virus, which simply bogged down systems by replicating itself rapidly.

But a malignant virus would have been stopped cold by Micronyx's encryption features, he said. A virus is designed to attack certain types of files, and it recognizes those files because they have a distinct structure. Encryption completely scrambles that structure. "Micronyx-protected files are resistant to viruses because they don't look like anything the virus is used to," he said.

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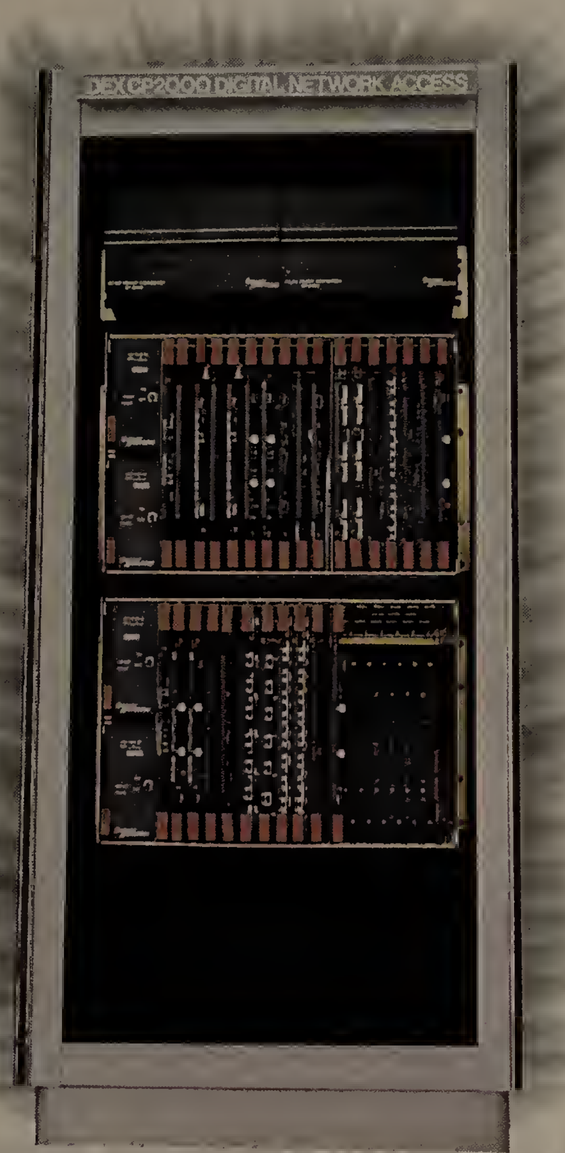

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Comdex hosts Token-Ring debut

continued from page 1

dent of Communications Network Architects, Inc., a consulting firm in Washington, D.C.

Doug Gold, client services manager for communications services at International Data Corp., a Framingham, Mass.-based research firm, said he anticipates the Token-Ring will become a popular backbone net. The network will also be used on a limited basis to support high-end workstation and graphics devices, he said.

"The high-bandwidth requirements in these [applications] are pushing Ethernet networks beyond levels they can handle," Gold said.

The 16M bit/sec Token-Ring uses shielded twisted-pair wire to support up to 260 active stations and features an Early Token Release option, which increases network efficiency and reduces transmission delay, according to Ed Fritch, IBM LAN marketing manager.

"The Early Token Release option means all users or workstations on the ring can transmit data concurrently," Fritch said. "The earlier 4M bit/sec device only allowed one user at a time to send data or requests around the ring." Fritch said the Early Token Release feature has also been incorporated into the IEEE's 802.5 standard.

Microcomputer interfaces for the 16M bit/sec ring include the Token-Ring Network 16/4 Adapter for the IBM Personal Computer and the 16/4 Adapter/A for Micro Channel-based models of the company's Personal System/2 product line.

Both adapters support either 4M bit/sec or 16M bit/sec networks and are half the size of current 4M bit/sec network interfaces because they are based on CMOS technology.

"There are only about two other companies in the country that could design a single [very large-scale integration] chipset of this level of performance," Dzubeck said.

The cards also have 64K bytes of random-access memory, compared to 8K or 16K of RAM used with the earlier interfaces. This makes it possible to support more concurrent sessions. When used in servers, the increased memory will enable more network workstations to share the device, even in 4M bit/sec rings, IBM said.

The memory boost also makes it possible to support larger data frames. The 16M bit/sec ring supports data frames containing up to 18,000 bytes, and 4M bit/sec rings now support frames with up to 4,500 bytes. The older Token-Ring limited frame sizes to 2,000 bytes. According to John Budway, IBM's manager of LAN system planning for communications systems, the increased frame size can improve transmission efficiency by as much as 300% in specialized cases.

Both the 16/4 Adapter and the 16/4 Adapter/A cost $895. IBM will sell the older 4M bit/sec adapter for $635, $200 less than the current price.

Wire issue

The 16M bit/sec Token-Ring offering is available on both shielded twisted-pair wiring and fiber-optic media. But unlike the earlier 4M bit/sec Token-Ring, the high-speed product will not run on unshielded twisted-pair wiring.

"It's really not practical from an engineering standpoint to run 16M bit/sec Token-Ring over unshielded telephone twisted pair," Budway said. Nodes on an unshielded 16M bit/sec ring could not be more than six feet apart, he said.

Although IBM does not anticipate an outcry from users over the wiring issue, several users at the show expressed disappointment about the need for shielded wiring.

"We just rewired our building in Kansas City with unshielded twisted pair. When and if we install a 16M bit/sec Token-Ring, it's going to cost us about $100,000 for IBM Type 2 twisted-pair cabling," said Rick Wright, a technical specialist at PARS, Inc., an airline reservation company owned by Trans World Airlines, Inc. and Northwest Airlines, Inc.

Other interfaces

Besides the microcomputer Token-Ring adapter, IBM introduced a series of products designed to provide a range of connectivity options for the local network.

The company unveiled two new versions of the Network Bridge Program to provide local and remote bridging for the 16M bit/sec ring. The bridge programs allow users to interconnect Token-Rings operating at the same or different speeds to form one logical ring.

Version 2.0 of the program is a local bridge, and Version 2.1 supports links to remote Token-Rings at speeds ranging from 9.6K bit/sec to the T-1 rate of 1.54M bit/sec.

Both versions of the Network Bridge Program cost $1,595 for first-time users and $305 for users upgrading from Version 1.1. Version 2.0 will be available in February 1989, while Version 2.1 is slated to ship next July.

Other interfaces announced include:

- The 3174 Subsystem Control Unit Type 3A Dual Speed Communication Adapter, which is said to provide substantially more throughput than the older 4M bit/sec Token-Ring Adapter. The device costs $3,500.
- The 3745 Token-Ring Adapter Type 2 provides direct attachment of IBM's top-of-the-line front-end processor to either a 16M or 4M bit/sec Token-Ring, enabling users to bring Token-Ring networks into IBM Systems Network Architecture environments.

IBM also announced a Token-Ring interface for the 9370 that enables a minicomputer to act as a server or a gateway to other resources, and it also unveiled an interface for the Series/1 that reportedly supports all models of the 4956 processor.

Budway said IBM will provide an attachment for the AS/400 machines in the future but would not give a specific date. ◼

Vendors plot Token-Ring connectivity

By Laura DiDio
Senior Editor

LAS VEGAS — Just hours after IBM introduced the 16M bit/sec version of its Token-Ring Network at Comdex/Fall '88 here last week, five local network vendors announced plans to offer compatible products in the second half of 1989.

Leading the token-ring charge are Proteon, Inc., 3Com Corp., Ungermann-Bass, Inc., Western Digital Corp. and Madge Systems, Inc.

Doug Gold, client services manager for communications services for Framingham, Mass.-based research firm International Data Corp., said these announcements were only the beginning. "Within a year, you can expect dozens of companies to have 16M bit/sec token-ring products," he said.

As of last week though, none of the token-ring suppliers would be specific as to when they would ship 16M bit/sec token-ring products. Availability of 16M bit/sec token-ring adapter cards is dependent on when Dallas-based semiconductor maker Texas Instruments, Inc. can deliver its token-ring chipset.

IBM will use a proprietary chipset for its 16M bit/sec Token-Ring Network.

TI has not officially said when its chipset will be available. But IBM and local net vendors said they expect TI to unveil the chipset in the first half of 1989. The local net vendors said their 16M bit/sec token-ring offerings would be available soon after.

Ed Fritch, IBM's LAN marketing manager, said availability of the TI chipset will drive the 16M bit/sec token-ring market and ensure an adequate supply of adapter boards. Earlier this year, IBM's Token-Ring Network 4 Adapters were in short supply. The supply problem finally eased in June ("IBM: Token-Ring shortages are over," *NW*, June 20).

"Another advantage of the forthcoming TI chipset is that it will let other vendors develop adapter cards for their own devices so that non-IBM workstations or systems can attach to 16M bit/sec Token-Ring LANs," Fritch said. "The more users and devices that attach to Token-Rings, the more pervasive the Token-Ring standard will become."

Unlike the single-chip IBM offering for the 16M bit/sec Token-Ring Network, TI's offering will consist of three chips, and will not offer the two-speed selectability between 4M bit/sec and 16M bit/sec of IBM's 16/4 Adapter, according to Frank Dzubeck, president of the Washington, D.C. consulting firm Communications Network Architects, Inc. "The TI chipset doesn't have the capability to toggle between the 4M and 16M bit/sec speed the way the IBM chip does," he said.

This was confirmed by Proteon President Patrick Courtin, who said Proteon's initial implementation of the new token ring "will be a 16M bit/sec-only version. I expect we'll have our 16M bit/sec token ring available by the second half of 1989. We will offer a 4M-16M bit/sec at some point, though." ◼

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IRS profits from filing system

continued from page 1

the processing time for tax returns, according to a spokeswoman at the Cincinnati Service Center, which is actually located here in nearby Kentucky.

EFS eliminates the need to open, sort and edit paper returns in preparation for keying the necessary data into the IRS computer systems.

In addition, EFS facilitates storage of tax returns because transmitted returns can be stored on laser disks. From there, they can be retrieved by computer. Paper returns, on the other hand, have to be filed and retrieved manually.

The spokeswoman estimated that more than two million taxpayers will have their returns filed electronically next year. In 1990, EFS will be available throughout the country, and by 1995, the IRS expects that 35 million people will use the service.

Tax preparers are free to determine the price they charge taxpayers to transmit returns. H & R Block, Inc., which has transmitted the lion's share of tax returns to date, charged $20 to transmit a client's return this year and $30 to transmit a return prepared elsewhere, according to Steven Dickey, assistant vice-president and director of marketing for the company. Prices for 1989 have not been set but an increase is expected, he said.

Dickey declined to say how much the company profits from offering the transmission service, but carriers that offer similar services to independent companies that prepare tax returns charge less than half of what H & R Block charges.

H & R Block transmitted 479,300 returns this year, or about 80% of the total received by the IRS, Dickey said. It plans to expand the service from the 14 markets covered last year to 51 this year, representing about one-third of the country.

The H & R Block name is on 8,400 tax service offices nationwide but about half of those are franchises, Dickey said. He expects that 60% of the franchises will use H & R Block's Rapid Refund service. With this service, the company charges a fee to send a courier to collect returns, which are then transmitted to the IRS from a central location.

If they can find a better deal, franchises are also free to purchase transmission service from outside vendors.

One provider vying for some of that business is SPEED>S Corp. of Minneapolis, a value-added reseller of packet network services that does about one-third of its business with tax preparers. Nathaniel Forbes, president and founder of SPEED>S, said his company will use its SPEED>Filing packet network to transmit tax returns for at least 1,500 tax service offices next year.

SPEED>S provides preparers with the software necessary to format returns to IRS specifications. It charges anywhere from $4 per transmission for preparers that transmit more than 5,000 tax returns per year to $8 for those that transmit less than 100 returns.

Tax preparers dial into SPEED>Filing, which is provided over Telenet Communications Corp.'s public data network, and transmit data prepared on a personal computer to a SPEED>S mainframe in Minneapolis. From there, data is collected and transmitted via SPEED>S' own dedicated X.25 link to either the IRS center here or to the one in Ogden, according to Forbes.

H & R Block uses a similar method, except preparers dial into its data center via CompuServe, Inc.'s packet network. CompuServe, a wholly owned subsidary of H & R Block, has two dedicated lines feeding the Cincinnati Service Center and two running out to Ogden.

At the IRS centers, data is collected on an IBM Series/1 minicomputer configured to accept data from 15 4.8K bit/sec dial-up modems and 10 dedicated 9.6K bit/sec modems, said Cecil Bowman, electronic filing coordinator for the Cincinnati center. SPEED>S, CompuServe and Globenet, Inc. only use four of the 10 dedicated modems. Bowman would not say who will use the others.

> The IRS estimates that more than two million taxpayers will file electronically next year.
>
> ▲▲▲

Incoming data is stored on magnetic tape and fed to a Unisys Corp. mainframe, where each return is checked for mathematical errors and to ensure that each item has been completed.

The mainframe creates acknowledgments that are usually forwarded back to the Series/1 within 18 hours. As part of the logon procedure, preparers must pick up their acknowledgments before transmitting more returns. Rejected returns are sent back to the preparer with a message detailing problems.

Once processed, another tape is created and sent to a central processing center in Martinsburg, W. Va., along with tapes created from paper returns. Data for paper returns is keyed in by IRS employees.

At Martinsburg, tapes are collected from all 10 IRS service centers and run against master tapes to update each taxpayer's file. Paper and electronic returns are processed the same way at this point.

Once returns are processed, though, taxpayers who file electronically can elect to have refunds deposited directly to their bank account. This feature is used as a marketing ploy by tax preparers that offer another feature in conjunction with certain banks — refund anticipation loans.

H & R Block will offer this service with three different banks, Dickey said. For a fee, which was $35 this year, the bank grants a loan for the amount the taxpayer expects to have refunded from the IRS. The taxpayer gets the money in about a week, and the IRS later deposits the return in an account set up specifically to pay off the loan.

According to Irene Macomber, supervisor of the electronic filing unit in Andover, Mass., business returns from throughout the country can be transmitted to a separate data center in Andover using much the same procedures as those used for individual returns. ◼

Florida net links police crime labs

By Bob Brown
Senior Writer

TALLAHASSEE, Fla. — The Florida Department of Law Enforcement recently began the cutover of a statewide net that will link crime laboratories to improve the handling and tracking of evidence from crime scenes.

Six crime labs across the state will be outfitted with minicomputers tied into a central site via dedicated lines. The network is scheduled to be phased in by the end of 1989; initial equipment shipments have already begun.

Investigators will use the network to match evidence from new crimes with evidence from unsolved crimes. The improved communications among labs is also expected to prevent lab workers from duplicating each other's work, said Tim Sheridan, a research and development specialist at the Department of Law Enforcement here.

At the labs, physical evidence is tested to help identify weapons, suspects and victims. The evidence is also prepared for display during court trials.

In the first phase of the project, the Tallahassee lab will be linked to a crime lab in Orlando. From there, labs in Fort Myers, Jacksonville, Pensacola and Tampa will be added to the network.

Currently, workers in the crime labs find it difficult to work together and share their findings because their computers are not linked. In addition, budget constraints have limited the number of computers currently used in the crime labs, Sheridan said.

This lack of communication sometimes leads to the duplication of efforts. Often, a crime lab will spend time studying evidence that another lab has already tested, he said. In other situations, such as when a crime scene is located midway between two labs, evidence from the same crime will go to two different labs.

Each lab currently sends information about evidence it tests through the mail to a central data base. There is no way to know that another lab has tested the same evidence until such data is sent to the main data base, he said.

The new network, dubbed Crime Laboratory Automated Staff Services, will allow the labs to send or retrieve data from a central data base on an NCR Corp. 9800 mainframe here, he said.

This will help eliminate the duplication of efforts since investigators will be able to monitor evidence recorded in the data base to determine if it has already been tested, Sheridan said. Feedback on inquiries will be available on-line, he said.

(continued on page 50)

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

The Open Software Foundation last week named A. David Tory its president and chief executive officer effective Dec. 1.

Tory, who is currently executive vice-president of planning at Computer Associates International, Inc., will take a leave of absence from that job to head up the group, which is working to develop a common version of Unix.

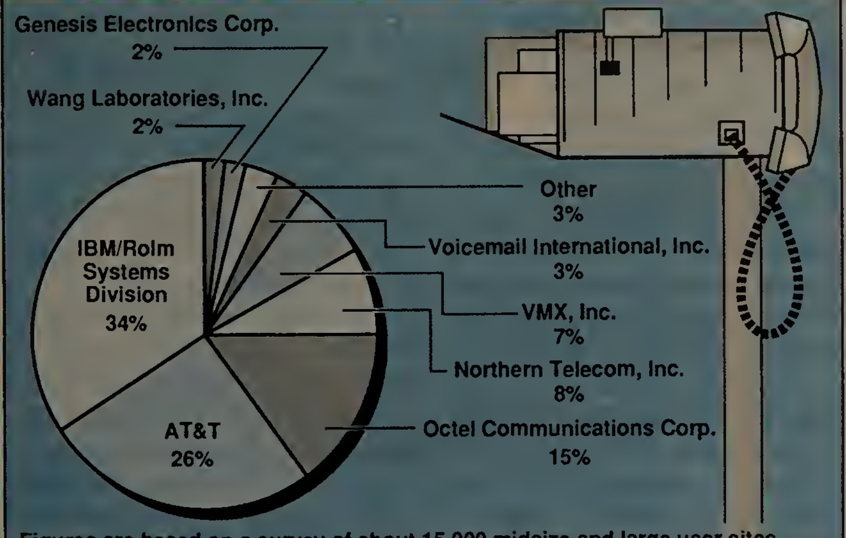
People & Positions

Vitalink Communications Corp., the Fremont, Calif.-based maker of data gateway products, recently promoted two executives. **Patrick Nettles**, formerly chief financial officer and vice-president of finance and administration, has been named vice-president of strategic planning and business development, a newly created position. Nettles will focus on long-term strategic development, including merger and acquisition opportunities. **Wes Saia**, formerly the company controller, assumes Nettles' position.

Richard Royer last week was appointed chief financial officer at **Dialcom, Inc.**, a Rockville, Md.-based supplier of electronic mail and value-added messaging products and services. Royer will be responsible for Dialcom's financial and accounting activities. He will report to Dialcom President John Morris.

Dan Paschall was recently named director of customer engineering at **Globenet**, an Alexandria, Va.-based interexchange packet-switch data network carrier. Paschall will be responsible for expanding the company's customer service programs, overseeing project management, training and sales support.

Users' voice mail buying plans



Figures are based on a survey of about 15,000 midsize and large user sites.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: COMPUTER INTELLIGENCE, LA JOLLA, CALIF.

NMI subsidiary nabs EPA net management contract

CRC Systems responsible for telecom analysis, operations mgmt. and voice/data transmission.

By Paul Desmond
Staff Writer

FAIRFAX, Va. — Network Management, Inc. (NMI) recently announced that its subsidiary, CRC Systems, Inc., landed a $10 million contract to manage the U.S. Environmental Protection Agency's (EPA) telecommunications network. The contract is the largest ever awarded by a nonmilitary government agency, NMI said.

Under the three-year contract, CRC Systems is responsible for telecommunications analysis and operations management for EPA headquarters in Washington, D.C., 10 regional offices and up to 48 laboratories around the country. The contract covers voice and data transmission, including telephone, radio, television, satellite, voice mail and teleconferencing systems.

CRC Systems will handle nationwide network planning; design of all voice systems; cost management, including call-processing analysis and cost analysis; development and maintenance of inventory records; and the installation and relocation of equipment.

Richard Burman, CRC Systems' assistant vice-president for telecommunications technology, said the EPA deal is a task order contract, meaning individual work orders can be defined during the course of the contract but the total value of all work orders cannot exceed $10 million.

NMI President Michael Muntner said CRC Systems' involvement with the EPA has evolved over the past five years. NMI already had a contract to design, implement, monitor and maintain the network at EPA's headquarters but will now extend the scope of that contract nationwide, Muntner said.

Net management trend

He said the contract award is in keeping with a trend among government agencies to give up management of their networks to private companies. The Treasury Department's data network is managed by Computer Sciences Corp. and the Department of Defense enlisted a number of contractors, including CRC Systems, to manage its networks, he said.

Private businesses are looking toward outside contractors to manage their networks as well, Muntner said. He cited the example of Merrill Lynch & Co., Inc., which is soliciting bids for the management of parts of its voice and data communications networks. The brokerage company sent out requests for proposal to AT&T, MCI Communications Corp. and US Sprint Communications Co.

Government agencies were the first to look to outside net management services because they anticipated the difficulties AT&T's divestiture would breed. Thus, they put a cadre of contractors in place beforehand, he said.

CRC Systems is actively pursuing contracts among both government agencies and the private sector, Muntner said, although he declined to name any companies, other than Merrill Lynch, that have put out RFPs.

NMI Chairman Howard Frank said in a prepared statement: "The EPA contract represents a model for the future. By putting their telecommunications operations into the hands of experts, government agencies and businesses can concentrate on what they do best."

Govt. pacts luring firms toward GOSIP

Vendors developing protocol-compliant wares in hopes of winning lucrative government jobs.

By Bob Brown
Senior Writer

Although the Government Open Systems Interconnection Profile (GOSIP) will not be enforced as an acquisition standard for almost two years, vendors are already prepping GOSIP-conformant products and accelerating their entire Open Systems Interconnection schemes.

Billion-dollar government networking contracts are driving companies ranging from IBM to Retix to develop GOSIP-compatible products, analysts said.

GOSIP, a specification meant to ensure net compatibility by detailing which of the options available within the OSI model the government should use, was approved as a standard in August by the U.S. Secretary of Commerce.

It will become a federal information-processing standard on Feb. 15, 1989, but government agencies have an 18-month grace period to allow them to plan for a smooth transition to the GOSIP standard. During that same period, vendors will have the chance to develop and bring GOSIP-compliant products to the market.

Army, NASA seeking GOSIP

Refusing to wait until the last minute, the U.S. Army and the National Aeronautics and Space Administration have already sent out requests for proposal that call for GOSIP-compliant products, vendors said.

Such requests have "forced this market to happen," said Andy Lauta, manager of product marketing at Touch Communications, Inc., a Scotts Valley, Calif.-based firm that sells OSI-based network software. "The level of urgency is definitely increasing for vendors."

Touch already offers products that are close to being GOSIP-conformant, Lauta said. Specifically, the company's products that comply with the Technical and Office Protocol 3.0 specifications are similar to those in GOSIP. The company plans to reveal

(continued on page 12)

INDUSTRY BRIEFS

The **U.S. Postal Service** recently awarded a $7 million contract to **NET Federal, Inc.**, a wholly owned subsidiary of Network Equipment Technologies, Inc., to upgrade and expand the Postal Service's digital T-1 backbone network.

NET Federal, which is based in Vienna, Va., will provide the Postal Service with up to 47 Integrated Digital Network Exchange Transmission Resource Managers.

The equipment will provide multiplexing, routing, switching and network management functions for voice, data and image applications, the company said. The agreement marks NET Federal's largest contract to date.

Apollo Computer, Inc. of Chelmsford, Mass., last week announced a contract for the sale of more than 100 workstations to the University of Montreal. Terms of the contract were not disclosed.

The university will use a network of Apollo Series 3000, 3500 and 4000 workstations in six laboratories located throughout the university for computer science instruction.

Oracle Corp. recently announced the acquisition of **Falcon Systems, Inc.**, a Bethesda, Md.-based systems integrator, for about $20 million.

Falcon Systems will be merged with Oracle Complex Systems Corp. (OCSC), Oracle's Arlington, Va.-based systems integration subsidiary. OCSC President Bob Laurence assumes the additional post of president of Falcon Systems. Falcon focuses its business on the federal market.

Oracle, headquartered in Belmont, Calif., markets a line of software products for data base management, application development, office automation and financial applications.

Ericsson of Stockholm, Sweden, recently won a contract to

(continued on page 12)

Vitalink sells off satellite division to small start-up

By Wayne Eckerson
Staff Writer

FREMONT, Calif. — Vitalink Communications Corp. announced recently that it sold its satellite transmission division to Vitacom Corp., an independent company formed three months ago by a group of Vitalink employees.

The move enables Vitalink to focus on its core business — providing bridge products for linking geographically dispersed local networks.

Vitacom purchased all the assets of Vitalink's satellite communications business for an undisclosed sum.

Vitacom is based in Mountain View, Calif.

Vitalink sells two types of data link bridges, both of which support T-1 and E-1 circuits for connecting local networks. One bridge links 802.3 Ethernet local networks, and the other connects token-ring local networks. Vitalink also sells a network management product that manages these wide-area networks.

Vitalink was founded in 1980 as a satellite transmission company. It installed large earth stations in major U.S. cities to create a high-speed network that provided an alternative to expensive terrestrial links.

Along the way, Vitalink also began selling videoconferencing technology and local-area interconnection products that it had developed jointly with Digital Equipment Corp.

In 1986, Vitalink reorganized the company to focus its resources on developing local networking interconnection products, a market the company believed offered potential for rapid growth. It discontinued the videoconferencing division and decided to freeze new investments in the satellite business.

A year later, Vitalink discontinued its satellite division.

"We found ourselves with limited financial resources, and we had to make some hard decisions about which parts of the business to support," said Patrick Nettles, vice-president of strategic planning at Vitalink. "We just didn't see the returns on our satellite division to be worth continued investment in research and development."

Nettles said Vitalink gave itself one year to either find a buyer or completely phase out the satellite business.

Vitacom President Al Horley, one of Vitalink's founders, left Vitalink in 1987 to negotiate the purchase of its satellite division, according to a Vitalink spokeswoman. Horley established Vitacom in September and solidified the deal with Vitacom soon after. Horley has hired many of the managers who supervised Vitalink's satellite division.

Richard Villars, a communications analyst for International Data Corp. in Framingham, Mass., said the deal was good for both companies.

"A company like Vitalink cannot justify the risk of continuing to support the satellite business, for which there is shrinking demand. On the other hand, a smaller, undiversified company like Vitacom can capitalize on the capital-intensive facilities already in place — satellites and earth stations — to make money over the short term. Basically, it's a win-win situation," he said.

Villars said he thinks Vitacom will need heavy capital investment to develop new technology if the company is going to survive for more than five years.

New agreement with DEC

Last week, DEC and Vitalink signed an agreement allowing DEC to resell Vitalink's TransLAN product line directly to its customers. The new pact revises a 1984 agreement in which DEC referred its customers to Vitalink salespeople.

Under the agreement, DEC will provide installation, warranty and service for the Vitalink bridges it sells.

"The agreement shows that Vitalink bridges have become Digital's wide-area network solution. It should lay to rest the opinions of certain analysts who have said Digital will introduce a wide-area network bridge to compete with ours," Nettles said.

"The agreement also expands the exposure of Vitalink products in the marketplace. Digital's sales force of about 10,000 people will increase our exposure by a factor of 10," he said.

DEC and Vitalink have worked together to develop and market Vitalink's bridges since 1984.

Industry Briefs

continued from page 11

provide $70 million worth of AXE digital switches to Racal Telecom for its expanding cellular radio network in the UK.

Ericsson's switch was selected by Vodafone, the Racal subsidiary that provides cellular telephone services.

The equipment will be used in Vodafone's planned digital network, which will become part of a pan-European digital network service in the 1990s.

Comdisco, Inc. recently announced that **Comdisco Recovery Services, Inc. (CRS)** has been awarded a contract to provide **GTE Data Services, Inc.** with nationwide disaster recovery capability to back up its data centers. Terms of the agreement were not disclosed, but CRS said this marks its most significant contract to date.

GTE Data Services, a wholly owned subsidiary of GTE Corp., operates a network of eight regional data centers. The contract calls for CRS to provide hardware and voice/data communications backup through a portion of its network. CRS' network consists of 10 recovery centers and 21 hot sites throughout North America.

M/A-Com, Inc. of Burlington, Mass., last week reported fourth-quarter income of $4.7 million, up from a loss of $48.2 million for last year's fourth quarter. This year's income for the fourth quarter, which ended Oct. 1, included a $2.3 million pretax gain from the sale of M/A-Com's systems engineering center. Last year's results included losses from discontinued operations.

The company's fourth-quarter revenue was $102.9 million, compared with revenue of $99.2 million for the comparable period last year.

For the year ending Oct. 1, M/A-Com reported net income of $18.3 million, compared to a net loss of $35.3 million for fiscal year 1987. Revenue for the year totaled $424.2 million, compared with revenue of $436.1 million last year.

IDEAssociates, Inc. of Billerica, Mass., last week announced the acquisition of **Alcatel Information Systems** of Tempe, Ariz., for an undisclosed price.

IDEAssociates makes personal computer communications products and terminals for IBM's System 3X and Application System/400 mid-range computers.

Alcatel Information Systems is a maker of terminals, controllers and printers for IBM's mainframe systems.

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Govt. pacts lure firms to GOSIP

continued from page 11

its GOSIP offerings next year.

Because OSI and GOSIP will allow for the interconnection of increasingly large multivendor networks, Touch believes it will make much of its GOSIP-related dollars as a subcontractor to various systems integrators, Lauta said. Several systems integrators are currently funding Touch research on GOSIP and other OSI technologies, he said.

The first major GOSIP-compatible product announcement was made roughly three months ago when Retix said it was coming out with application software and coprocessor cards that comply with the government standard ("Retix airs GOSIP PC offerings," *NW*, Sept. 5).

The Retix products, which are designed for use with personal computers running either Unix System V Release 3 or MS-DOS, are: X.400 Message Handling System; File Transfer, Access and Management (FTAM); and X.500 Directory Services. These products are due out before the second quarter of 1989, the company said.

> Vendors without solid OSI plans "are starting to sweat," Network Strategies' Horn said.

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While Digital Equipment Corp. does not promote its OSI-compatible products as GOSIP-compatible, most of them do comply with GOSIP, said Lee Sudan, enterprise marketing manager for DEC's Networks and Communications Marketing Group.

DEC's existing OSI-compliant products will be fully GOSIP-compliant when the company's VAX FTAM offering is modified within four months, Sudan said. The next version of DECnet Phase V will also support the GOSIP specifications, he said.

Mary Modahl, a research analyst at Forrester Research, Inc. in Cambridge, Mass., said the incentive to win lucrative government contracts has encouraged vendors to invest research and development money in GOSIP as well as OSI-compatible products for commercial users.

"If GOSIP requires vendors to come up with OSI communications protocols, those products are going to be available to Fortune 1,000 users," Modahl said. "GOSIP is going to have a reverberation effect of blessing OSI in the commercial world."

Jeffrey Horn, a consultant at Network Strategies, a Fairfax, Va.-based telecommunications consulting practice of Ernst & Whinney, said vendors without solid OSI plans "are starting to sweat," but that most vendors at least have plans.

"Most of those with plans just need to accelerate them," he said. "I think they are starting to hustle. The grace period is helping them."

IBM and DEC's OSI products are so close to GOSIP that the two companies only need to modify them, Horn said. "It will definitely be worth it."

Lauta added, "If [the vendors] are going to play in the government market, they've got to have GOSIP."

Paul Nelson, senior communications and networking consultant at Venture Development Corp., a Natick, Mass.-based management consultant and market research firm, said the Department of Defense has driven the GOSIP specifications.

"A lot of the agencies, especially the military, can no longer afford to have all of these disparate systems not communicating," Nelson said. "You just cannot afford to forego the competitive advantage and organizational advantage in moving toward automation.

"Today, for any large entity, that means open systems and multivendor communications," he said. GOSIP and OSI still have their limits in areas such as product performance and security, but greater user and vendor acceptance of the standards should rectify these shortcomings, he said.

"If there was any doubt at all whether or not MAP or TOP would be the boon to OSI," Nelson said, "the fact that GOSIP is coming along and that the largest buyer [the government] is going to be using it makes it obvious that it's going to be hard in the long run to do business with any of your customers if you don't have OSI."

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TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

US Sprint Communications Co. recently completed construction of the last major route in its 23,000-mile fiber-optic, long-distance network. The fiber path runs from St. Paul, Minn., to Seattle and will be operational by the end of this year.

Carrier Watch

Pacific Bell is looking for enhanced service providers to participate in a two-year market trial of six basic service elements (BSE) to be offered by the carrier. The company plans to conduct the trial in San Francisco, Los Angeles, San Diego and Sacramento, Calif.

The trial, scheduled to begin Dec. 1, will involve 30 central offices in the four metropolitan areas.

The six BSEs are a message-waiting indicator, a feature allowing the enhanced service provider to activate the message-waiting indicator, a feature that forwards calling information to the provider and three other call-forwarding features.

During the trial, the enhanced service providers will buy the six BSEs from Pacific Bell and offer information services that incorporate them to end users. Pacific Bell plans to charge varying amounts for the BSEs in the different cities before it submits tariffs for them to the California Public Utilities Commission.

Anyone interested in participating in the trial can contact Pacific Bell at (415) 545-8367.

Williams Telecommunications Group, Inc., a subsidiary of The Williams Companies, Inc., recently began offering fiber-optic digital data service to 28 additional U.S. cities. This brings to 87 the total number of cities that are served by the dedicated private-line service. ◘

New Hampshire signs up for digital Centrex service

Multimillion-dollar deal goes to New England Tel.

By Bob Wallace
Senior Editor

CONCORD, N.H. — The state of New Hampshire last week signed a seven-year, fixed-price contract for roughly 3,000 lines of New England Telephone and Telegraph Co. Intellipath II digital Centrex service.

Nynex Systems Marketing, a New England Telephone Centrex sales agent, closed the multimillion-dollar deal. As part of the contract, the Bell operating company will upgrade its central office switch here to an AT&T 5ESS that will serve about 60 sites in the state.

Currently, New Hampshire uses more than 2,000 lines of analog Centrex, a New England Telephone spokesman said. The BOC will begin the cutover to digital service next month.

"In the last two years, the number of Centrex lines the state uses has more than doubled," said Nancy Baglieri, a senior account executive with New England Telephone.

Like a growing number of users, the state signed a long-term Centrex contract that fixed pricing for the length of the agreement. "[The state of New Hampshire] was looking to control its telecommunications costs," Baglieri said.

State officials could not be reached for comment on the deal.

Other users that have signed long-term, fixed-price Centrex contracts include Ford Motor Co., Federal Mogul Corp., the state of California and 3M Corp.

The Centrex upgrade was called for in a long-range networking plan developed by the state's telecommunications department. The plan was approved and is supported by New Hampshire Gov. John Sununu, according to Baglieri.

The state did not send out a request for proposal for the new Centrex, opting instead to purchase digital Centrex service from Nynex Systems Marketing, Baglieri explained.

The state will use Intellipath II features not available with analog Centrex. They include distinctive ringing, automatic callback and automatic route selection, the BOC spokesman said.

Baglieri said the state wants to buy and install an adjunct computer and software that would link the state to the serving central office and support other advanced Centrex features, including station message detail recording to premises and a multisite message desk. ◘

WASHINGTON UPDATE

BY ANITA TAFF

Flat as a stagnant pond. U.S. leaders must either recognize the importance of telecommunications and set appropriate policies or watch the U.S. slip into second-class status in the world economy, William Weiss, chairman and chief executive officer of Ameritech, said last week in a speech before the Economic Club of Detroit.

"The approach to telecommunications taken in this nation adds up to a breathtaking economic blunder," Weiss said. Other countries such as Japan have policies that bolster the competitiveness of telecommunications providers. Weiss claimed that telecommunications will grow from 9% to 20% of Japan's gross national product (GNP) by the year 2000. In the U.S., the telecommunications market has been "as flat as a stagnant pond," currently accounting for 4.2% of GNP and unlikely to grow much in the future, he said.

Weiss cited the lack of a coherent telecommunications policy as the root of the problems in the U.S. "We're so thoroughly tangled in our political underwear that we haven't been able to draft a comprehensive national telecommunications policy since 1934," Weiss said. Although he did not specifically mention the AT&T Consent Decree, he criticized restrictions that prevent the regional Bell holding companies from manufacturing and providing information services.

In September, Weiss gave a press conference at the National Press Club here in which he urged Congress to support legislation freeing the RBHCs from the Consent Decree restrictions.

(continued on page 14)

US Sprint captures AT&T business

Month	Customer	Contract value	Carrier replaced
January	Sony Corp. of America	$20 million	AT&T
April	SystemOne Corp.	$100 million	AT&T
	SmithKline Beckman Corp.	$30 million	AT&T
June	State of Illinois	$108 million	AT&T
	Westinghouse Electric Corp.	$10 million	AT&T*
August	Nynex Corp.	$5 million	AT&T*
October	General Electric Co.	Multimillion dollar	AT&T*

* Includes business captured from other carriers as well.

Figures are based on 1988 contract statistics.

SOURCE: US SPRINT COMMUNICATIONS CO., KANSAS CITY, MO.

Call quality losing ground as user lure

Customers shift focus to pricing since top three carriers offer similar long-distance line quality.

By Bob Wallace
Senior Editor

Telephone call quality is no longer a differentiating factor between long-distance services offered by AT&T and US Sprint Communications Co., industry watchers claim.

US Sprint is the only major carrier that operates an all-digital, nationwide, fiber-optic network. AT&T and MCI Communications Corp. are playing catch-up and are quickly replacing analog network equipment with digital switching and transmission systems.

US Sprint has long claimed that the call quality of its all-digital service is higher than services offered by AT&T and MCI. Analysts claim call quality is now roughly equal among the top three carriers.

As a result, analysts contend, pricing has replaced call quality as the most important factor among users considering changing carriers.

US Sprint has formally announced contracts this year that will generate $247 million over several years. The carrier landed the business by offering high-quality services priced below those offered by AT&T, analysts said. In several instances, US Sprint replaced AT&T as the user's primary long-distance carrier (see chart, this page).

Access lines at fault

Robert Self, president of Market Dynamics, Inc., a New York-based consulting and network design firm, said low-quality local access lines are largely to blame for noise on long-distance lines. Regardless of the long-haul carrier used, call quality will be about the same.

Self, author of *Long Distance for Less: The Official Guide to Long Distance Telephone Services in the United States* (published by Market Dynamics, 1988), said users should turn their attention from call quality to more pressing issues, such as service feature options, billing and management reports.

Like many other new US Sprint customers, Bankers Trust Co. in New York said it made US Sprint its primary carrier because cost savings was a top priority. Earlier this year, the bank signed a multiyear agreement that will generate $4 million in annual revenue for US Sprint.

"Price was the No. 1 consideration with quality running a very close second," according to Bankers Trust Telecommunications Vice-President Robert Lawley. "US Sprint has demonstrated its ability to provide the very best in terms of quality and account support."

Self said users should turn their attention from call quality to more pressing issues.

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US Sprint will eventually carry 65% of the bank's domestic long-distance traffic and will become its top international carrier, replacing AT&T and MCI. Lawley said Bankers Trust will also realize substantial savings by replacing some AT&T and MCI service with US Sprint offerings, but he would not say how much.

Many large users have verified the high quality of US Sprint service before signing on the dotted line. Bankers Trust, Sony Corp. of America and SmithKline Beckman Corp. all rigorously tested US Sprint lines before accepting the carrier's services.

(continued on page 14)

Indiana Bell introduces advanced Centrex products at conference

By Bob Wallace
Senior Editor

INDIANAPOLIS — Indiana Bell Telephone Co. announced two advanced Centrex products at the CommTrends '88 conference here last week.

CommTrends is an Indiana Bell-sponsored conference at which current and planned products are discussed and demonstrated. The Bell operating company said about 200 of its customers attended the daylong event.

One of the new Centrex products unveiled by Indiana Bell was the Ameritech Service Management System (ASMS), which provides a Centrex user with access to data stored in various central office management systems.

From an on-premises personal computer equipped with special software, a Centrex user can file trouble reports and place orders for new Centrex lines. Users can also track the status of orders and trouble reports from the personal computer.

"ASMS is Ameritech's response to customers that demand greater control of their Centrexes," said Jeffrey Lohse, complex business markets district manager for Indiana Bell. Lohse said Indiana Bell customers will begin testing ASMS in the first quarter of 1989. The BOC will offer the product in the third quarter of 1989.

The second new offering, the Automatic Call Distribution with Management Information System (ACD/MIS), is an automatic call distributor service supported by a Northern Telecom, Inc. DMS-100 central office switch. Lohse said the BOC uses six of these switches at central offices throughout Indiana.

The switch distributes incoming calls to agents at the user site via Centrex lines. ACD/MIS was designed for businesses with high calling volumes, including airlines, catalog fulfillment centers and financial institutions, Lohse said.

"In the past year alone, we have had several large customers express a strong interest in this type of service," Lohse said.

Lohse said the service may be supported through other central office switches in the future. "We are currently working with [Bell Communications Research, Inc.] to find ways to offer it from AT&T and Siemens [Information Systems, Inc.] central office switches."

The service is used in conjunction with personal computer-based ACD management software developed by a third party. The BOC central office passes ACD performance data over a dial-up line to the on-premises personal computer. That data can include the total number of calls handled by agents, the length of time callers wait before speaking with an agent and average call duration.

Using the data, the MIS software generates a variety of management reports.

Lohse said Indiana Bell will not tariff the ASMS service but will instead sell it as part of customer-specific Centrex projects. ACD with MIS is available now.

Call quality losing ground as user lure

continued from page 13

In each case, the user replaced AT&T with US Sprint as its primary carrier. Top AT&T officials are concerned about US Sprint's string of coups, according to those who track long-distance carriers' marketing strategies.

Frank Blount, president of AT&T's Network Operations Group, addressed the issue of call quality at a meeting at AT&T's Red Bank, N.J., facility on Oct. 12 through 14. Blount is in charge of the units that operate, maintain and expand the carrier's long-distance network.

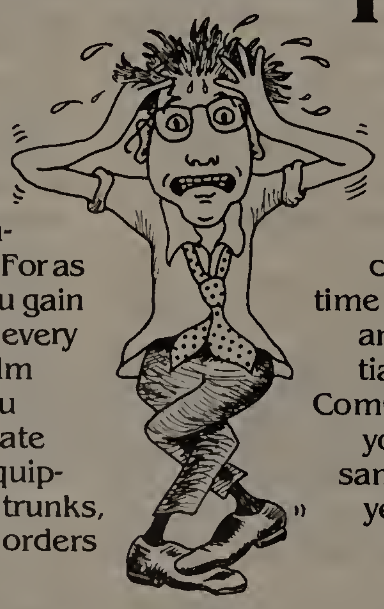
"Blount said [US Sprint] ranks very high on quality," according to an attendee, Jerry Stern, research director for Eastern Management Group, a research and consulting company in Parsippany, N.J. AT&T uses a model to determine how it compares on call quality with other carriers for each user contract, he said.

"AT&T is really feeling the pressure from US Sprint," Stern said. "It's the image [US Sprint] is building that really bothers them."

At the briefing, AT&T discussed AT&T Bell Laboratories-developed software that instructs its central office switches to route traffic over digital facilities where possible. AT&T has already installed the special routing software in all its 4ESS switches and will not charge users extra for this switching feature, according to an AT&T spokesman ("AT&T speeds effort to digitize its net," *NW*, Nov. 14).

"Even though their network is not fully digital, they said they can send 95% of all network traffic over digital facilities," Stern said.

Like Self, Stern downplayed the role call quality plays in companies' decisions to change carriers. "I really don't think anyone gives a damn about quality anymore," he said.



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Washington Update

continued from page 13

Calling card recall. Pacific Bell began issuing new calling cards to all of its business and residential customers last week in response to an October ruling from U.S. District Court Judge Harold Greene.

Greene found that Pacific Bell's practice of imprinting on calling cards AT&T's international number, which is used to bill international calls to home accounts, was discriminatory. Pacific Bell estimates the cost of reissuing eight million new cards will be at least $7 million.

The company stopped putting the international number on cards in February, so 1.8 million cards will not need to be recalled. The Pacific Bell calling cards can still be used to charge long-distance calls from AT&T and other carriers, including MCI Communications Corp., US Sprint Communications Co., Allnet Communication Services, Inc., One Call Communications, Inc. and SouthernNet, Inc.

Diaz-Dennis fights telco-cable TV finding. Federal Communications Commissioner Patricia Diaz-Dennis issued a statement last week voicing her disagreement with a July 20 preliminary FCC finding that telephone companies should be allowed to own cable television systems.

While she says she supports the idea that such cross-ownership might bring new services at a lower cost to the public, Diaz-Dennis said there are still a number of questions to be worked out before proceeding. Telephone companies should not be allowed to purchase an existing cable company in their own service area, she said, because this would tend to decrease, rather than increase, competition.

A second major question Diaz-Dennis raised is whether telephone companies would be allowed to provide video programming services. She said her current preference would be to limit telephone companies to the provision of video dial tone, a plan endorsed by the National Telecommunications and Information Administration that would limit telephone companies to providing only transmission facilities. However, Diaz-Dennis said proposals allowing the telephone companies to provide programming content are also worthy of consideration.

New products set to debut at Unicom show

By Rex Bowman
West Coast Correspondent

DALLAS — Organizers of the North American Telecommunications Association's (NATA) Unicom 2 Conference & Exposition, to be held here next week, expect vendors to announce a record number of products during the three-day event.

NATA officials said some 110 products will be unveiled at Unicom 2, which will feature more than 700 vendor exhibits. Among the companies expected to introduce products are TIE/communications, Inc. and Votan.

TIE/communications is set to introduce a key telephone system, known as the Businesscom IMS, that supports 32 extensions and offers voice messaging, automated attendant answering and call accounting, as well as remote diagnostics and programming capabilities.

The voice-messaging and automatic attendant features give callers the option of speaking to human operators.

Customers can access the key system's call-accounting records through a personal computer, and the remote programming feature allows the dealer's service department to reprogram the system remotely from a personal computer connected to a modem.

Businesscom IMS also features speed dialing, internal and external paging, and conferencing capabilities.

Pricing and availability information have not yet been released.

Votan is expected to unveil an application generator, called The VoiceBuilder, which is a software product that lets users build voice-response applications for Votan's VPC series of personal computer-based voice-processing cards.

The software operates on IBM Personal Computer ATs running under PC-DOS.

According to Votan, the software design aid allows users to develop both voice response and voice recognition applications. It also lets users exit C language programs and reenter the application generator at any time, simplifying the application-building process.

The VoiceBuilder enables programmers to build applications more rapidly because portions of programs are already built into the VoiceBuilder, according to Votan. The application generator also features a powerful command language that requires far fewer commands than general programming languages.

The programs built into the product already include such features as remote diagnostics; the ability to track message and caller statistics; the ability to update voice messages from any phone; personal identification management, in which the system screens users before letting them access the system; and the ability to schedule, at predetermined times, events such as the transmission of data to and from a host computer.

Votan plans to charge buyers $7,500 for a license to develop applications based on VoiceBuilder. The company will also charge a onetime fee starting at $2,500.

TIE is located at 8 Progress Drive, Shelton, Conn. 06484, or call (203) 926-2000. Votan may be contacted by writing 4487 Technology Drive, Fremont, Calif. 94538, or by calling (415) 490-7600.

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Worth Noting

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John Leong
Director of networking
and communications
Carnegie-Mellon University
Pittsburgh

Data Packets

Relay Communications, Inc. announced last week a new version of its IBM mainframe software that enables microcomputers to emulate 3270 terminals and dial up remote hosts via standard telephone lines.

Relay/3270, originally designed for VM-based hosts, is now available for MVS-based hosts running VTAM. Microcomputers connecting to Relay/3270 on the mainframe must be equipped with Relay Gold software.

Using the VTAM version of the software gives microcomputer users access to applications running under MVS, as well as to applications on other hosts linked to the MVS mainframe in a Systems Network Architecture network.

Relay/3270 for MVS/VTAM can run on the same mainframe with another software package, Relay/TSO, which is used for file transfer between the mainframe and microcomputers equipped with Relay Gold.

The new software is priced at $14,500 and is available now.

Relay Communications, formerly VM Personal Computing, Inc., is located at 41 Kenosia Ave., Danbury, Conn. 06810, or call (800) 847-3529.

Hayes unveils V.42- and X.25-compliant modems

Firm builds LAP M and MNP into V.42 offering.

By Jim Brown
New Products Editor

ATLANTA — Hayes Microcomputer Products, Inc. recently expanded its line of V Series Smartmodems with the introduction of a CCITT V.42-compliant modem that supports error control and speeds up to 9.6K bit/sec.

The company also announced a V Series Smartmodem that includes an X.25 packet assembler/disassembler and is compatible with the CCITT X.32 standard for dial-up access to X.25 packet nets at speeds up to 9.6K bit/sec.

If Hayes ships its V.42 modem in January as planned, it will be the first vendor to reach the market, according to analysts. Other modem makers, including Microcom, Inc. and Concord Data Systems, Inc., are also said to be developing V.42 modems.

The V.42 standard, developed by CCITT Study Group XVII, reached final draft stage last April and went before the full Consultative Committee on International Telephony and Telegraphy for adoption at a plenary meeting in Melbourne, Australia, last week.

V.42 specifies two error-control techniques for asynchronous modems supporting dial-up point-to-point communications at up to 9.6K bit/sec. Hayes is in full compliance with the standard because it supports both methods: the Link Access Procedure (LAP) M protocol, which is largely based on LAP B, and the Microcom Network Protocol (MNP).

LAP M is the primary error-control technique in V.42. MNP was included in the standard to enable the large installed base of MNP modems to communicate with V.42 modems.

Future enhancements to V.42 will be built into the LAP M protocol. A CCITT study group is about to begin work on V.42bis, which will enhance LAP M to support data compression. That V.42 enhancement will not be incorporated in MNP.

(continued on page 49)

Office messaging device sends via building wiring

By Paul Desmond
Staff Writer

LOS ANGELES — Telautograph Corp. recently introduced an office messaging device that allows users to communicate over the existing electrical wiring within a building.

Telautograph is touting its Omninote device as an alternative or complement to electronic mail systems, voice mail systems and facsimile machines.

Omninote is a keyboard-like device with an LCD display that can be used to create, store, display or print messages. It can also be used to leave messages for other Omninote users.

The device transmits data over the building's electrical wiring so users need only plug it into an alternating current outlet to communicate with other Omninote users in the building. A central processing unit designed for installation in a wiring closet supports 150 Omninotes and handles routing of messages among users. Transmission speed varies depending on the number of users transmitting simultaneously.

Using a built-in modem, Omninote can also communicate with remote Omninotes via dial-up telephone lines. Similar to a facsimile machine, the Omninote requires a dedicated phone line to communicate outside a building.

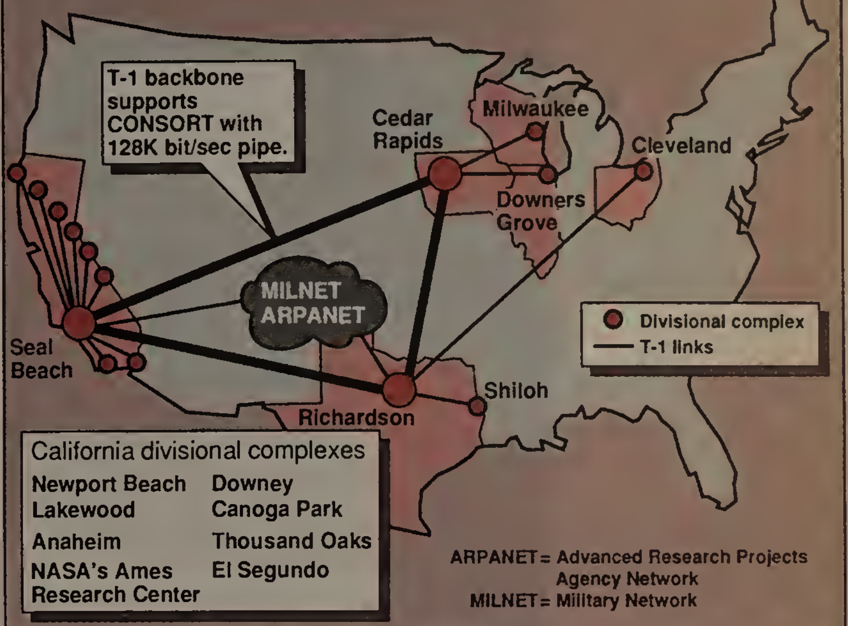
The keyboard has six keys that the user can program to send often-used messages. For example, if a user is on the telephone and receives another call, a second Omninote user can send a message identifying the new caller. Without interrupting the conversation, the first user can press the appropriate preprogrammed key to send the second user a message such as "Tell him to hold" or "Take a message."

One early user said Omninote has improved productivity in his office. At the law firm of Grove, Jaskiewicz, Gilliam & Colbert in Washington, D.C., legal administrator Ron Sukonek said the machine has eliminated the need for attorneys to check with the receptionist for messages each time they leave their office.

It has also allowed attorneys to prioritize phone calls without having to put anyone on hold. "Attorneys will always want to make the person they're talking to feel as if they are the most important person," Sukonek said. "[Omninote] made us better able to handle the incoming calls and have the attorneys prioritize who they wanted to speak with."

(continued on page 49)

Rockwell's CONSORT connection



California divisional complexes

Newport Beach
Lakewood
Anaheim
NASA's Ames Research Center
Downey
Canoga Park
Thousand Oaks
El Segundo

ARPANET = Advanced Research Projects Agency Network
MILNET = Military Network

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: ROCKWELL INTERNATIONAL CORP., SEAL BEACH, CALIF

Rockwell connects LANs over T-1 net

Project will link divisional sites with multivendor equipment and different networking protocols.

By John Cox
Senior Editor

SEAL BEACH, Calif. — Rockwell International Corp. is carving out bandwidth on its nationwide T-1 network to interconnect Ethernet local nets at its far-flung divisional sites.

The project, dubbed Connection Service Of Rockwell Telecommunications (CONSORT), represents a major change in emphasis for the company, which had built up a strongly centralized network based on IBM's Systems Network Architecture.

Linking local networks over the T-1 backbone will, for the first time, enable divisions with different vendors' equipment and different networking protocols to share information with one another, with subcontractors and with trading partners.

CONSORT is intended to provide users at 15 divisional sites connectivity options that are comparable to Rockwell's SNA environment, said Ted Sickles, manager of Rockwell's data network group.

Just as users on the SNA network can use a single terminal to access applications anywhere on the mainframe network, CONSORT will enable workstation users on divisional local networks to access files and applications on remote local nets or within SNA.

This access is needed to bring together the Ethernet islands that have sprung up through the giant aerospace and defense contractor, said Robert Bystedt, Rockwell's director of telecommunications services.

Huge, complex projects like the shuttle orbiter and the B-1 bomber require massive coordination between Rockwell, government agencies and hundreds of subcontractors, Bystedt said. With CONSORT, everything from messages and purchase orders to engineering designs and software development can circulate among different computers on different networks.

"We can tie the multivendor arrangement into the SNA network, which we haven't been able to do in the past," Bystedt said.

Rockwell has traditionally maintained a hierarchical SNA network centered on mainframes. Besides that data network, Sickles' group runs the company's private voice net. Both voice and data traffic are routed over a network of roughly 60 T-1 links that reaches across the U.S. Each division has at least one T-1 link to the main network.

CONSORT will enable users on divisional local nets to access files on remote local networks.

▲▲▲

Distributed computing was implemented at the divisional level in the mid-1980s. At that time, the divisional locations, which generally comprised a complex of buildings, installed Ethernets running Digital Equipment Corp.'s DECnet and Transmission Control Protocol/Internet Protocol to link DEC VAXes

(continued on page 49)

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CHOICE

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LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

The TOPS Division of Sun Microsystems, Inc. announced last week the shipment of its 500,000th TOPS local network software package.

Netnotes

Performance Technology, Inc. recently said the first 1,000 users to order its PowerLan Innovator and have it installed by January 1989 will get 90 days of free use.

As part of the promotion, Performance Technology said users with Version 1.1 of the software will receive Version 1.2 free.

Also, unlimited-user PowerLan Innovator buyers will receive an automated backup/restore software package free.

The PowerLan operating system gives users compatibility with Novell, Inc. NetWare networks at the seventh or Application Layer of the Open Systems Interconnection Model.

While most personal computer nets run under NetWare or with Network Basic I/O System-compatible calls alone, PowerLan adds application-level NetWare emulation under NETBIOS.

PowerLan software is NETBIOS-compatible and runs on any local net with a NETBIOS interface.

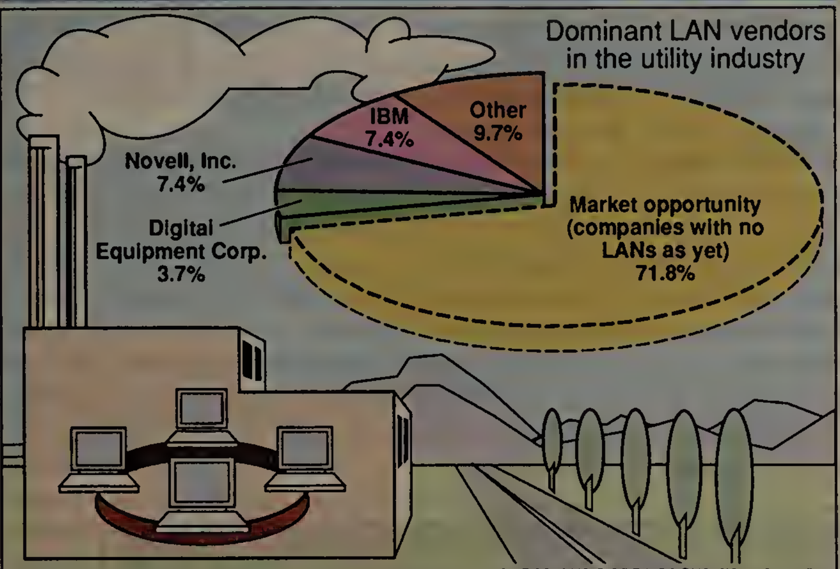
It also allows resource sharing at workstations and printers.

PowerLan Version 1.1 is now available in a four-user version, PowerLan/4, for $595; an eight-user version is priced at $1,195; and the unlimited PowerLan/+ package lists for $995. The PowerSave automatic archive/restoration package, which normally sells for $495, is bundled in with PowerLan/+ orders, free of charge.

PowerLan Version 1.2 will begin shipping in early 1989; pricing has not yet been set.

For more information, contact Performance Technology at 800 Lincoln Center, 7800 IH-10 West, San Antonio, Texas 78230; (512) 349-2000. ◼

Utilities power up with LANs



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: THE SIERRA GROUP, TEMPE, ARIZ.

IEEE 802.3, 802.5 panels OK fiber-optic proposals

Basic technology is set but other issues remain.

By Paul Desmond
Staff Writer

PHOENIX — Standards for fiber-optic Ethernet and token-ring local networks came a step closer to becoming reality when the IEEE 802.3 and 802.5 committees voted at a recent meeting here to accept the proposals of their respective study groups.

The 802.3 Fiber Optic Star (FOSTAR) Study Group that was conducting research on Ethernet on fiber was renamed the 10-BaseF Task Force and is expected to be authorized to draft a standard. The 802.5J Task Force will write the standard for fiber token-ring networks.

Donald Loughry, chairman of the 802.3 committee and standards manager for the information networks group at Hewlett-Packard Co., said the standards must be drafted and agreed upon before being put to a letter ballot for full committee approval.

Next, the standard must be approved by members of the Technical Committee for Computers and Communications. That group subjects it to another letter ballot before it goes to the IEEE Standards Board for final approval.

Each letter ballot takes four to eight months, and the whole process takes about two years, according to Michael Coden, president of Codenoll Technology Corp. and a member of both the 802.3 and 802.5 committees.

Coden said the recent votes represent the culmination of about two years of work on establishing the basic technology behind the standards.

Now, the task forces negotiate on the language to be used in the standard, a process that should be made easier by the technical battles already waged.

"The technical direction is set, and a lot of the hard issues are resolved," Loughry said. "To me, the key thing is that they know the direction they're headed and they've selected a basic set of technologies."

Keith Amundsen, chairman of the 802.3 FOSTAR Study Group and director of interconnect development at ChipCom Corp. in Waltham, Mass., said the proposed fiber Ethernet standard is broken down into three parts: a common section that outlines characteristics of connectors and the fiber itself; and two other parts that address active star and passive star topologies.

Amundsen said one goal of the new task force will be to comply with the emerging Fiber Distributed Data Interface specifications so users can upgrade when that standard is completed.

Robert Donnan, chairman of the 802.5 committee and formerly a senior engineer at IBM, said the 802.5J Task Force arrived at a compromise proposal from five different schemes.

Donnan said the 802.5J Task Force plans to have a standard proposal ready for public ballot by the middle of next year.

Coden, whose company makes fiber local network products, said the recent votes mean users can now buy fiber Ethernet or token-ring networks that claim to adhere to the standard and be reasonably sure they will have an upgrade path to the standard.

Loughry would not make the same claim. "Yes, the technical direction is set, but there are still lots of issues to be resolved.

"There are many fiber-optic implementations in the marketplace that utilize concepts that are imbedded in or implied in the direction the FOSTAR task force is now taking," Loughry said. "I'm hopeful and confident that [experience] will be used." ◼

Datapoint unveils gateway to NETBIOS

Arcnet PCNS Gateway provides users of RMS with connectivity to industry-standard PC nets.

By Laura DiDio
Senior Editor

LAS VEGAS — Datapoint Corp. last week announced a personal computer-based gateway that will enable users to link its proprietary Arcnet local network running RMS to NETBIOS-based personal computer networks.

The Arcnet PCNS Gateway, announced at Comdex/Fall '88 here, includes an Arcnet interface card for a personal computer as well as gateway software.

The personal computer translates NETBIOS requests for resources, such as file, print and communications services, into RMS-compatible requests, according to Datapoint Product Manager David Hendon.

"This lets users of Datapoint proprietary systems share resources with an industry-standard PC network," Hendon said.

"Previously, users on RMS-based nets could execute only single-user MS-DOS applications. They didn't have access to multiuser MS-DOS applications, such as Ashton-Tate [Corp.]'s dBase III Plus data base management software or Borland International [Inc.]'s Paradox, which are becoming a necessity in most business environments today."

The Arcnet PCNS Gateway supports a maximum of 16 simultaneous user sessions. Additionally, the device provides full personal computer network access to Datapoint's multiprocessor servers based on Intel Corp.'s 80386.

Most servers currently available on the market are single-processor servers, according to Don Bynum, the company's vice-president of worldwide marketing.

"Datapoint's multiprocessor servers give network users up to 80 times [more] speed in processing requests than a single-processor PC-based file server," he said.

Datapoint is selling the hardware and software portions of the PCNS Gateway separately. The software costs $1,000 for a configuration of 16 simultaneous users. The Arcnet PCNS interface

(continued on page 20)

LANMARKS

BY MICHAEL CLAIR

Vendors' upgrade paths key to 10BaseT success

One of the more recent efforts to standardize local networks concerns technology for running Ethernet over twisted-pair wiring in a star topology. The Institute of Electrical and Electronics Engineers is currently drafting this standard, called 10BaseT.

Network managers wanting twisted-pair Ethernet before the standard is finalized should ask two questions: Will current products conform to the standard when it is established? And what will happen to networks that have been started with prestandard equipment?

There should not be a problem if the vendor is committed to the standards effort and has an upgrade path.

Commitment means testing current products against the specifications of each proposed 10BaseT draft to ensure that a feasible migration path exists.

At each stage in the development of the proposed standard, there are certain factors that are decided upon and that can be used as a basis for ensuring upward compatibility. The process of defining the 10BaseT standard is following the usual path of a standards-setting body.

The IEEE 10BaseT Study Group first met in August 1987. In March 1988 the group chose the attachment unit interface (AUI) proposal as the basis for a draft standard for a twisted-pair 10M bit/sec carrier-sense multiple access with collision detection net. This builds on the IEEE 802.3 Ethernet standard.

(continued on page 20)

Clair is vice-president of marketing and sales at SynOptics Communications, Inc. in Mountain View, Calif.

Datapoint unveils gateway to NETBIOS

continued from page 19

card sells for $199.

"We chose not to bundle the hardware and software for the gateway because many of the target users are already Arcnet users and have the interface card," Bynum said.

The Arcnet PCNS Gateway will begin shipping within 60 days, Hendon said.

Unix Network Server out

Also at the Comdex/Fall show, Datapoint said it began shipping the DX220 Unix System V Network Server, which it announced in February.

The DX220 Unix System V file server is fully compatible with the company's Arcnet local network and its RMS network management operating system.

Targeted at the emerging commercial market for the Unix operating system, the DX220 file servers are available in a variety of configurations to support large amounts of random-access memory, disk storage and tape backup units.

Single-unit pricing for the DX220 Unix System V servers begins at $16,000.

"We designed it to European ergonomic standards, which means, among other things, it's extremely quiet. You won't hear the fans blowing like you do with most PCs on the desktop," Bynum said.

Datapoint also showcased a new set of image management software tools for value-added resellers and end users that do their own application development.

The software lets developers extend applications written in Databus, C or COBOL to include storage and retrieval of images from scanned documents, photographs or digitized video. It runs on Datapoint's Datalan networks running MS-DOS or on RMS-based networks, Bynum said.

Beta test in municipality

He said a beta test for the new tool kit is being conducted in a municipality that is using it to integrate photos of houses with tax assessments. Bynum declined to name the municipality.

"They not only have the legal description of the property [in the data base] but you can see in living color what the property looks like," Bynum said.

The tool kit will be available in January. Pricing starts at $12,000.

For further information, contact Datapoint at 9725 Datapoint Drive, San Antonio, Texas 78229, or call (512) 699-7117. ◼

Upgrade paths key to 10BaseT success

continued from page 19

To date, no IEEE standard has been established for 10M bit/sec Ethernet over twisted-pair cabling. As a result, no vendor can claim 10BaseT compatibility or compliance.

There are, however, twisted-pair Ethernet products on the market that emulate portions of the previously defined coaxial-based Ethernet standard.

While final details of the 10BaseT AUI approach are not specified in the current draft proposal, companies using the AUI approach in their current products should be a step closer to meeting the 10BaseT standard with minor modifications.

The 10Base Study Group, now officially an IEEE task force, is ironing out specifications of the draft standard. It will take months, possibly even a year, before the final recommendation is defined as a standard.

The task force must submit its draft to the 802.3 working group and the Technical Committee on Computer Communications of the IEEE Computer Society for their separate approvals. Then it must go to the IEEE Standards Board for final approval.

The study group's work on the 10BaseT standard has already taken about 14 months and may go on until March 1989. Final approval of the standard is not likely until December 1989.

> The study group's work on the 10BaseT standard has taken about 14 months and may go on until March 1989.

▲▲▲

The 10BaseT Task Force meetings often involve ongoing discussion about exacting technical details.

In addition, ideas must be formulated and tested between meetings. The process can be time-consuming whenever participants differ on their ideas of what the standard should finally entail. At the same time, tedious though the process may be, it ensures that the standard will be useful for all concerned.

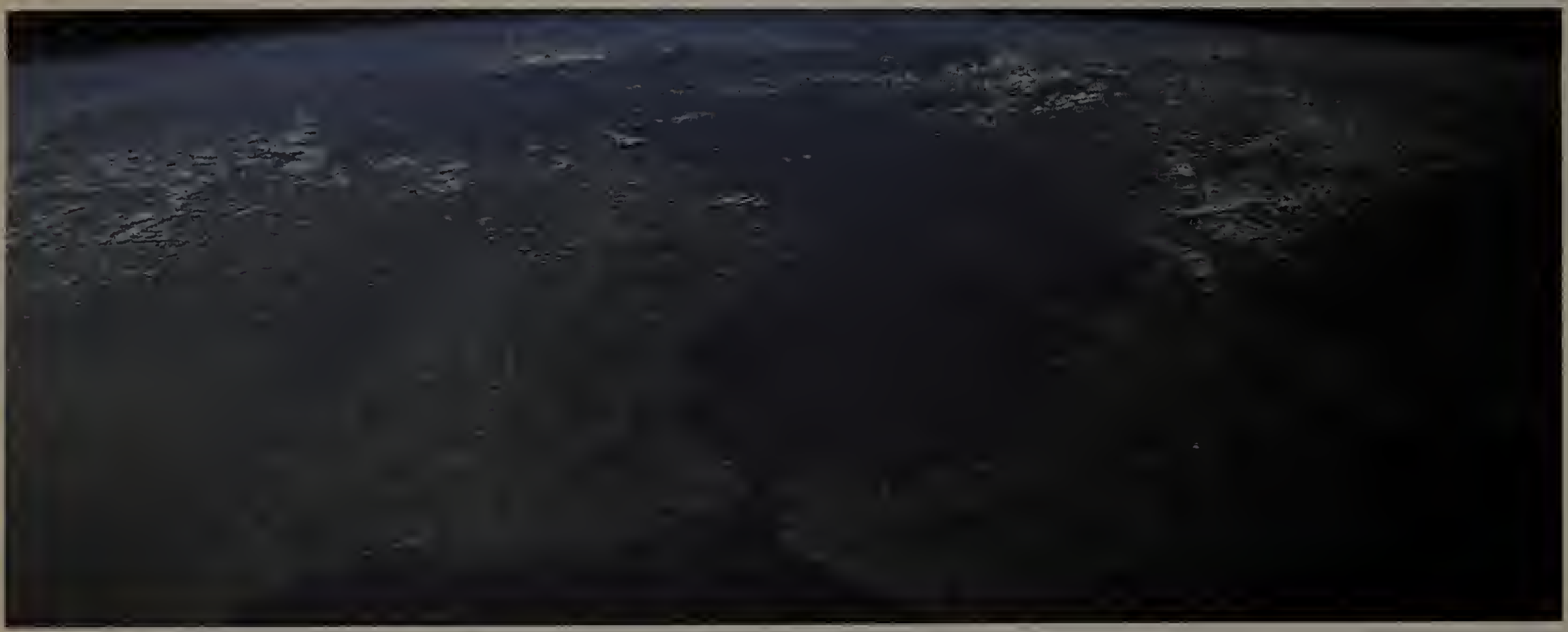
This process will no doubt yield an excellent, much-needed standard, followed by a wave of new products.

But what is confusing the industry right now is the fundamental difference between standards, draft proposals and today's products.

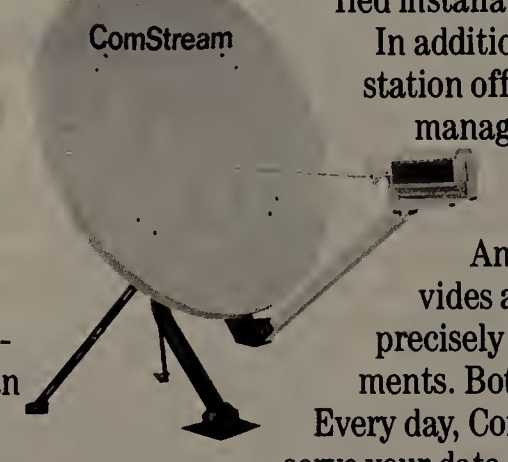
Until the completion of the 10BaseT standard, all products are prestandard. And until then, vendors that are currently selling twisted-pair Ethernet solutions cannot know what the precise standard will be.

Conscientious vendors will review the outcome of each meeting to ensure that their products will be compatible with the standard. The vendors' commitment to providing an upward migration path for their products is crucial for end users and network managers who are currently evaluating twisted-pair Ethernet local-area networks.

Even more crucial to network managers are the simplicity and economy of the vendors' approach to providing this upward compatibility. ◼



On the surface, all earth stations are not alike.



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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USERS GROUPS AND ASSOCIATIONS

Worth Noting

> "Bob Bennis put the ICA and users on the map in Washington."

Chester Bellairs Jr.
Former International Communications Association president on the retirement of Robert Bennis as ICA director of public policy.

Dialogue

Has the recent virus attack on the Internet research network caused you to rethink your security plans?

"We realize that as long as we're connected to the world, we're at risk. There have been bugs on operating systems for decades. We have to assume holes exist in the system and get ready to react. We can't afford to lapse into information ghettos because of the risk viruses pose to our system."

David Stonehill
Vice-provost for computing
University of Pennsylvania
Philadelphia

"Fortunately, our main campus computer system wasn't affected. But we have to be more vigilant in closing loopholes.

"We must be careful not to close communications between researchers and scientists in our vigilance to safeguard our networks. There is more to be gained by the flow of information than overzealous security."

Alfred Spector
Director of Information Technology Center
Carnegie-Mellon University
Pittsburgh

"Anyone with a large personal computer network is vulnerable. DOS is written in such a way that it can be compromised very easily. Our local network, like everybody's, has grown at the departmental level with very little control. We've put together a business plan that comprises things like testing software before it goes on a personal computer."

James Trimiglozzi
Project manager
Disaster recovery communications
Merrill Lynch, Pierce, Fenner & Smith, Inc.
New York

Otis, Dun & Bradstreet, Frito-Lay execs honored

All designed innovative, competitive networks.

By Wayne Eckerson
Staff Writer

NEW YORK — Three of the five winners of the 1988 Awards for Achievement in Managing Information Technology were honored for development of innovative networks that provide a competitive advantage to their companies.

The second annual awards ceremony, held here last week, was sponsored by American Management Systems, Inc., a management consulting firm based in Arlington, Va., and the Graduate School of Industrial Administration of Carnegie-Mellon University in Pittsburgh. A panel of six judges reviewed more than 200 nominations for the awards. The judges rated candidates on leadership, innovation and the impact their projects had on their companies and professions.

George David, president of Otis Elevator Co.; George Feeney, senior-vice president of advanced development at The Dun & Bradstreet Corp.; and Charles Feld, vice-president of management services at Frito-Lay, Inc., were recognized for their roles in the implementation of innovative network applications.

The two other winners were Phyllis Gardner, director of the Office of Management Programs of the Civil Division of the U.S. Department of Justice, and John Singleton, chairman and president of Security Pacific Automation Co., Inc.

Otis Elevator

Otis Elevator's David was cited for his work in creating Otisline, a 24-hour, centralized dispatching network that links Otis Elevator customers and repairmen to company headquarters in Farmington, Conn., using AT&T network services.

The improved customer service supported by the network has helped Otis Elevator increase its market share from 18% to 24% since 1983, when the network went on-line.

With Otisline, customers request repairs by calling an 800 number that connects them with a customer service representative at the company's headquarters. The representative then pages the closest Otis Elevator repairman, who calls back on a different number to find out where the customer is located.

(continued on page 22)

BOOK REVIEW

BY ERIC SCHMALL

Overcoming and easing the pain of transition

Surviving Corporate Transition, William Bridges (New York: Doubleday & Co., Inc., 1988), $18.95.

If an undergraduate business school or MBA program in the U.S. ever develops a course on corporate change management, *Surviving Corporate Transition* by William Bridges will be the core text.

In fewer than 250 pages, Bridges incisively chronicles the complexities of corporate change and its potentially devastating effects on human productivity, and also offers a manager's guide to handling such change. He uses modern case studies to show managers how to lead people from the secure present into the sometimes frightening future.

Bridges draws a distinction between change and transition. A change "starts with a new beginning, but a transition must start with an ending — with people letting go of old attitudes."

Changes are inevitable and occur at such random and accelerated rates that they cannot be managed, he says. Transitions, however, are another matter.

Bridges defines transition as a three-part process. The first part, the change itself, signals the end of the old order. Next comes the "neutral zone," a period of time between the death of the old and the birth of the new. The final stage arrives with the new beginning. The author uses this framework to describe

(continued on page 22)

Schmall is network systems manager for an insurance holding company.

Award-winning management achievements in information technology

Winner	Why
George David President and CEO Otis Elevator Co. Rocky Hill, Conn.	Created elevator repair network that helped Otis increase market share
George Feeney Senior vice-president Advanced development Dun & Bradstreet Corp. New York	Created DunsVoice and DunsGate, which let customers access data bases from push-button phones and PCs
Charles Feld Vice-president Management service Frito-Lay, Inc. Dallas	Designed a hand-held computer sales network that improved marketing, accounting and sales efficiency
Phyllis Gardner Director Office management programs Civil Division Department of Justice Washington, D.C.	Created office automation system that increased clerical and buyer productivity
John Singleton Chairman, CEO and president Security Pacific Automation Co. Los Angeles	Implemented management and performance monitoring system that cut costs and improved bank services

SOURCE: AMERICAN MANAGEMENT SYSTEMS, INC., ARLINGTON, VA., AND CARNEGIE-MELLON UNIVERSITY, PITTSBURGH

Managers examine net security issues

Two distinct duties emerge: responsibility for net security and responsibility for computer security.

By Barton Crockett
Senior Writer

Communications managers are debating their role in security matters in the wake of the recent virus attack that afflicted computers across the country.

The so-called worm virus coursed through national research networks, shutting down or slowing response time on hundreds of computers ("Virus victims are stoic in wake of multinet attack," *NW*, Nov. 14).

Most network managers said the key to understanding their role in protecting information systems lies in recognizing that network security is different from computer security.

Communications managers bear responsibility for limiting access to the network and securing the information that passes over it. That involves installing such things as dialback modems, which ensure that only authorized users can gain access to systems, and encryption devices to protect data on the network.

Other information systems employees, such as systems administrators, must protect computer systems at their sites. Systems administrators are responsible, for example, for overseeing password systems and installing security packages that protect computers from illegal tampering once a user is on the network.

In such a dichotomy, communications managers bear little responsibility for protecting information systems after a user has actually logged on to a network.

"We can't intercept every packet of data," said John Leong, director of networking and communications at Carnegie-Mellon University in Pittsburgh, where the virus invaded nearly 20 engineering workstations.

But network managers also must analyze networks for security weaknesses, helping computer professionals understand the characteristics of the network so they can protect computer systems accordingly. Computers on open, or easily accessed, networks must be secured differently than computers on a more controlled network.

"The research networks [over which the virus proliferated] are so open they're like superhighways," said David Wasley, manager of data communications at the University of California at Berkeley.

"Open nets are very difficult to protect," he said. "You probably shouldn't put anything on them that is so sensitive it would be catastrophic if you lost it."

Dialogue between network managers and systems administrators should be part of a general team effort to promote security, many users said.

"Network planners and systems administrators can't work in isolation when it comes to security," said Jeff Smith, vice-president of telecommunications operations at San Diego-based Science Applications International Corp. "Everyone is responsible for preventing hostile access to the network."

Overcoming the pain of transition

continued from page 21

how a manager can effectively help staff members through these phases.

His compelling essay on the psychological effects of corporate transition deserves careful attention. In it, he demonstrates why people resist change — even when they understand that change holds promise for them. He discusses the theories of loss that engender the resistance to change.

In the initial phase of change, Bridges says, the manager's role should be that of a concerned counselor, one who carefully explains the causes and effects of the change.

The manager's role in the change process increases after this point, Bridges says. He describes the next phase as the most overlooked in the process. At this point, managers have to assume a new role — a Moses leading his people through the desert.

Managers have to maintain high visibility, encouraging and remaining close to their employees. They must create the vision of a better future and remind everyone of the new opportunities coming their way. Managers, Bridges says, must keep workers' faith alive as the final stage approaches.

This last stage is what Bridges calls the new beginning: new processes, roles, responsibilities, missions and tasks. Having helped staff members through the end of the old order and on through the neutral zone, managers must assume yet another role. They must clarify everyone's new mission and train and coach them in the skills that this new era will demand.

Bridges emphasizes that managers must adopt an empathetic yet strong demeanor during the transition process. In addition, he advocates adopting different leadership roles as organizations move through this process. Some situations call for bold and innovative leadership. Others require cool, subdued and steady control.

The value of this book is immense for communications managers. It presents them with the skills needed to lead a staff through the rapid changes inherent in this industry. A manager who cannot understand why people would resist the installation of a new private branch exchange or the introduction of a new technology needs only to read this book. With the insight it provides, managers will recognize the dynamics of human reaction to any change. ◼

Otis, Frito-Lay, Dun & Bradstreet honored

continued from page 21

After the repair, the service technician calls in a report that is keyed into a terminal by a service representative at headquarters. The report is then transmitted to an IBM 3090 mainframe in Farmington. Service data is compiled and transmitted to personal computers in the company's 163 regional offices.

This information allows Otis managers to identify which local offices need additional support, and it provides engineers with data to analyze and improve elevator and escalator design.

Otisline has improved the firm's ability to service elevators and escalators. This has helped Otis increase market share at a time when elevator sales are leveling off nationwide. Besides helping Otis boost its market share, Otisline is ensuring a steady flow of revenue from service contracts.

Dun & Bradstreet

In 1980, George Feeney began work on a free-standing voice-response system that would let customers retrieve a wide variety of business information from Dun & Bradstreet's mainframes. Today, DunsVoice, a computerized voice information system developed by Feeney and his team at Dun & Bradstreet, handles more than 25,000 inquiries a day from subscribers.

The innovative system provides customers with quick, low-cost access to Dun & Bradstreet information and has been a significant factor in increasing the company's market share.

Feeney said DunsVoice has three unique features: it uses human, not synthesized, voice; it has a geographically distributed store-and-forward voice mail box system that lets users access the system with a local call, thereby avoiding WATS-line charges; and it uses a unique gateway, called DunsGate, that facilitates the transfer of data between remote voice mail boxes and mainframe data bases, which otherwise would require specialized programming at the mainframe.

The gateway also allows subscribers to retrieve information from mainframes using a personal computer and communications software provided by Dun & Bradstreet, Feeney said. Called DunsView, this system allows financial analysts to retrieve, for example, financial data from Dun & Bradstreet mainframes for use in spreadsheets on their office personal computer.

Frito-Lay

At Frito-Lay, Charles Feld spearheaded the development of a networking system that incorporates handheld computers. Implemented in 1987, the network is expected to save the company $20 million annually, according to a company spokeswoman.

Frito-Lay's more than 10,000 traveling salespeople use handheld computers to take inventory at customer sites. The computer, which attaches to a printer in the salesperson's van, enables the salesperson to print out an invoice for the customer while on the premises.

The salesperson uploads data from the handheld computer to a minicomputer at a regional distribution center via modem. The minicomputer compiles data from all sales representatives and transmits it to a host at the company's Dallas headquarters over dedicated lines. The mainframe uses the information to compile statistics used by management to adjust production and shipment schedules. ◼

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Worth Noting

Next week: *Network World's* Industry Focus examines how leading insurance companies are using their networks to offer innovative customer services.

First Look

Sytek to sell Adacom Terminal Gateways

Sytek, Inc. recently announced that it will sell gateways from **Adacom Corp.** that link IBM terminals to Sytek's broadband and Ethernet networks.

Adacom's **3270 Terminal Gateway** systems connect IBM 3278, 3279 and other terminals to Sytek's LocalNet 200 broadband networks and LocalNet 4208 Ethernets. The gateways let IBM terminal users access both IBM and ASCII asynchronous hosts.

Pricing on the gateways was not available.

Sytek, Inc., 1225 Charleston Road, Mountain View, Calif. 94043, or call (415) 966-7300.

Racore unveils wares for IBM-type LANs

Racore Computer Products, Inc. recently introduced two products for use with IBM-compatible local nets.

Racore's **LANpac** 802.5 token-ring interface card, which runs at 4M bit/sec and costs $540, uses Texas Instruments, Inc.'s TMS380 chip and is compatible with IBM's Token-Ring card. The **LANserver 386** supports the MS-DOS and Xenix operating systems. It has two expansion slots for 32-bit boards that support up to 16M bytes of memory, six 16-bit slots and two eight-bit slots. The LANserver costs $7,985 and is compatible with IBM Personal Computer ATs and XTs.

Racore Computer Products, Inc., 170 Knowles Drive, Los Gatos, Calif. 95030, or call (408) 374-8290.

C-COR video net controls 255 cameras

By Paul Desmond
Staff Writer

STATE COLLEGE, Pa. — C-COR Electronics, Inc. recently unveiled a video control system that provides centralized control of up to 255 cameras over a broadband coaxial cable net.

C-COR's Local Area Network Camera Control (LANCC) system lets users support cameras on as many as 41 video channels and provides for complete control of all pan, tilt, zoom and focus capabilities from a central workstation.

The system consists of three components: C-COR's QuickView software, LANCC Pods and a Master Modem.

The QuickView software runs on the network controller, an IBM Personal Computer or Personal System/2, and performs a polling function that makes the workstation act as a matrix switch for the 255 cameras, according to Dick Faulkner, C-COR's product manager for data products. The software also monitors the status of each remote communications link and lets the controller command the cameras to perform focus functions.

Each camera requires one LANCC Pod, a device that translates software commands into drive voltages used to control the cameras. The pod also modulates video signals to radio frequency for transmission on one of the 41 possible channels.

The Master Modem creates the communications link over the broadband coaxial cable that links the controlling workstation and all the pods on the network.

LANCC is currently in beta test at the University of California at San Diego (UCSD) and at Emory University in Atlanta. The UCSD police department is using the system to monitor locations such as loading docks, parking lots and the student bookstore. Emory is using it to monitor its computer center, Faulkner said.

Scheduled for general availability in the first quarter of next year, Quickserve will cost $6,000, and the Master Modem is priced at $3,835. Pricing on the LANCC Pod has not yet been set, but Faulkner said it will cost less than $3,000.

C-COR Electronics is located at 60 Decibel Road, State College, Pa. 16801, or call (814) 238-2461.

Spider multivendor E-net analyzers available in U.S.

Units study nets via packet-capture, decoding.

By Paul Desmond
Staff Writer

BURLINGTON, Mass. — Spider Systems, Inc. recently announced the availability of its Ethernet multivendor network analyzers in the U.S.

The SpiderMonitor P200 and SpiderMonitor K150 collect statistics about network loading, capacity usage, performance and station activity. They also perform network analysis through packet-capture and decoding.

The P200 is a self-contained personal computer-based portable analyzer. The K150 is a software and add-on board package that turns an IBM Personal Computer XT or Personal Computer AT into a network analyzer.

Both can be used to monitor and analyze Versions 1 and 2 of Ethernet IEEE 802.3 local nets.

SpiderMonitors enable users to switch between personal computer applications and analyzer functions, said Jeannie Hammond, Spider product market manager. While running a personal computer application, network monitoring functions continue in the background and data is stored in buffers, she said.

Six modes of network monitoring and analysis are supported. Statistics mode is for the continuous tracking of network operation. Performance mode displays network use in real time.

Summary mode profiles network utilization over a specified period of time, and test mode identifies failing nodes or links. Development mode is used to isolate problems due to incorrect protocols or bad packets. Traffic generation allows network managers to measure the impact of adding new stations.

The analyzers can decode packets using such protocols as Open Systems Interconnection and Transmission Control Protocol/Internet Protocol.

SpiderMonitor P200 was first introduced in Europe over a year ago, Hammond said. The K150 debuted in Europe about five months ago, she said. The SpiderMonitor P200 costs $11,900. The SpiderMonitor K150 software and board kit costs $7,850.

Contact Spider Systems at 12 New England Executive Park, Burlington, Mass. 01803, or call (617) 270-3510 or (800) 447-7807.

NEC unveils modem with mgmt. ability

Division's N9635 allows central-site operator to diagnose, configure remotely located modems.

By Jim Brown
New Products Editor

SAN JOSE, Calif. — NEC America, Inc.'s Data and Video Communications Systems Division recently introduced a CCITT V.32-compatible modem that enables a central-site operator to diagnose and configure similar remote modems.

NEC's N9635 operates at up to 9.6K bit/sec over dial-up or two-wire leased lines and features an optional Display/Program Module (D/PM), which enables users to diagnose and configure an unlimited number of remote N9635s from a central site.

A central-site N9635 outfitted with a D/PM can monitor the signal quality, signal-to-noise ratio and bit-error rate of remote N9635s. This obviates the need for front panels on each remote N9635. The N9635 supports Microcom, Inc.'s Microcom Network Protocol Level 5 data compression, which enables it to achieve an optimum throughput rate of up to 19.2K bit/sec.

Data compression enables a sending modem to translate strings of repetitive bits into shortened codes. Those codes are then reassembled into the original bit stream by the receiving modem. The N9635 also includes a buffer that enables attached data terminal equipment (DTE) to communicate with the modem at up to 19.2K bit/sec.

When the modem cannot maintain the optimum throughput rate, the buffer stores the data and transmits it at the lower line speed of 9.6K bit/sec.

NEC also introduced its N9631 modem, which is also CCITT V.32-compatible. The N9631 features a nonvolatile memory that stores the modem's configuration information.

In addition to V.32, both the N9635 and the N9631 can communicate with modems supporting CCITT V.22 and V.22bis, as well as the Bell 212A and 103 modem standards. Both also support asynchronous and synchronous operation and the Hayes Microcomputer Products, Inc. AT command set.

The N9635 costs $1,595 with the optional D/PM and $1,495 without the module. Purchased separately, the optional module costs $150.

NEC America's Data and Video Communications Systems Division is located at 110 Rio Robles, San Jose, Calif. 95134, or call (800) 222-4632 or (408) 433-1250.

The N9635 supports MNP Level 5 data compression, which enables it to achieve an optimum throughput rate of up to 19.2K bit/sec.

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Gateway airs fast E-net adapter for PCs, PS/2s

LAS VEGAS — Gateway Communications, Inc. introduced a high-speed Ethernet adapter for IBM Personal Computers and Personal System/2 Model 30s at Comdex/Fall '88 here last week.

G/Ethernet WS, the fourth product in Gateway's G/Ethernet family of adapters, has an average throughput of 75.23K bit/sec and 8K bytes of random-access memory.

G/Ethernet WS adheres to the IEEE 802.3 Ethernet standard and is compatible with Novell, Inc. NetWare-based Ethernets. To maintain 10M bit/sec transmission, the maximum Ethernet cable length the product allows is 1,000 feet per segment.

Gateway Communications said the board offers the same throughput as its G/Ethernet PC adapter for file servers, which has 40K bytes of RAM.

G/Ethernet WS is compatible with the other Gateway adapters in the G/Ethernet family. These include the G/Ethernet 8-bit PC, 16-bit AT and the G/Ethernet Micro Channel adapter for IBM Personal System/2s.

The product is available now and costs $345. For further information, contact Gateway Communications at 2941 Alton Ave., Irvine, Calif. 92714, or call (714) 553-1555.

OPINIONS

VOICE PROCESSING

BY CATHY CRUGAR

Innovations are driven by users' imaginations

Voice-processing sales are expected to exceed the $1 billion mark by 1990, according to one recent industry study. Another study, conducted by *Business Communications Review,* a bimonthly communications magazine based in Hinsdale, Ill., reveals that more than one-half of today's private branch exchange requests for proposal seek a voice-processing system, the most popular application being voice mail. Most major PBX manufacturers offer a voice mail system, either proprietary or through an OEM, integrated with their PBX.

The growth of the voice-processing market is a result of telecommunications managers becoming more creative in defining applications. The technology and the users have matured.

> Although the game of telephone tag is far from dead, voice processing offers alternatives.
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The automated attendant features of voice mail systems include variable time-of-day greeting and time-of-day diverting, as well as a choice between standard or customized prompts in English or a foreign language. Interactive voice response (IVR), a new technology for voice mail systems, made its debut in the college and university arena. The registration bottlenecks of long lines, costly support staffs and the never-ending battle to keep CRTs up and running are greatly reduced, but not eliminated, when an IVR device is installed.

Voice mail systems are usually provided by a single vendor and can be integrated with existing equipment. They are easy to manage because of statistical reports and diagnostic programs, and they do not require an on-staff guru for installation and maintenance. Although the game of telephone tag is far from dead, voice processing offers alternatives, and companies can see the benefits.

Users want information at their convenience; in order to get and give it, they are willing to listen to recordings, push buttons and talk to machines. Witness the general public's increased use of automated teller machines, automatic check-ins at the airport and even telephone calling cards.

Telecommunications managers have observed this evolution of user acceptance and system maturity and now view it as an opportunity to provide solutions. They have embraced the task of developing and customizing applications and have limited the diversity only to the boundaries of their own imaginations.

Gone are the days of voice-processing vendors telling customers how to use the products. This role has shifted to the telecommunications manager, and it's all for the best.

Voice processing replaces a traditional, real-time, person-performed function with a digitized voice from a machine. This can produce strong liabilities for a firm: Will the firm's image be affected in a positive or negative way? How drastically will the system affect the way company employees communicate, both internally and externally? No one is better qualified than the telecommunications manager to understand these impacts and to use the information when designing applications.

Certainly vendors are providing guidance on the best use of voice-processing technology — use voice mail as a one-way communications channel in addition to the traditional two-way channel, consider using automated attendants to answer frequently asked questions and use the IVR to provide bulletin-board information.

This is good advice. It's just enough to get the telecommunications manager thinking — and imagining. ☒

Crugar is a senior consultant with Telecommunications Management Corp., a voice and data consulting firm in Needham Heights, Mass.

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EDITORIAL

Policy-making by inaction is no policy at all

The Federal Communications Commission has its work cut out for it. Recent revelations regarding AT&T's Tariff 15 strategy make it abundantly clear that the FCC must rule quickly on the tariff's legality.

Currently, AT&T's first competitive pricing plan for Holiday Corp. — the original Tariff 15 filing — is under investigation by the FCC. If the FCC's performance in investigating Tariff 12, AT&T's other major competitive regulatory thrust, is any indication, the communications industry isn't likely to get any direction from the agency for at least a year.

Four of AT&T's five Tariff 12 custom network offerings are under way and under investigation by the FCC. A ruling on their legality doesn't seem to be forthcoming.

The FCC's inertia on these major issues is unfortunate. Tariff 15 raises fundamental questions about the current regulatory structure, which supposedly ensures that AT&T, as a dominant carrier, offers the same services at the same prices to all customers.

Although its legality is in limbo, Tariff 15 already represents a key component of AT&T's strategy to keep major users from flocking to its competitors. In reporting its most recent financial results, AT&T cited Tariff 15 as a major achievement, one that allows the company to move more aggressively in the long-distance market.

Opponents of Tariff 15 earlier warned that AT&T would move forward rapidly with Tariff 15 filings. Reports last week in *Network World* — that AT&T was preparing a Tariff 15 filing for Georgia-Pacific Corp. in Atlanta and that it may have pitched Tariff 15 to Cummins Engine Co., Inc. as the best possible deal for a nationwide voice network — indicate that AT&T may be doing just that.

> If the FCC's performance in investigating Tariff 12, AT&T's other major competitive regulatory thrust, is any indication, the communications industry isn't likely to get any direction on Tariff 15 from the agency for at least a year.
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Also, the Cummins Engine situation raises fresh concerns about Tariff 15. It was originally thought that AT&T would use Tariff 15 filings to meet off-tariff offerings made to its customers by rivals. But a document purportedly submitted to Cummins by AT&T says that Tariff 15 gives the carrier the flexibility to meet or beat offerings from other providers.

AT&T did not acknowledge the existence of the document obtained by *Network World.* A spokesman said that if the "meet or beat" proposal had been made, it was likely from an overzealous salesperson. He said AT&T "will never beat a competitor's price with Tariff 15 pricing plans."

But if AT&T made the claim to Cummins Engine, and if the company intends to use Tariff 15 in this manner, the rules of the game in the telecommunications industry could change dramatically. A source within the FCC's Common Carrier Bureau told *Network World* that, under the agency's rules, AT&T may have the flexibility to beat a competitor's pricing.

We don't necessarily oppose greater regulatory freedom for AT&T. That's a critical decision that must be arrived at after careful deliberation. But major policy changes should not come about through inaction on the part of the FCC. Tariff 15 raises important issues, issues that cannot be decided tacitly.

The time is now for the agency to rule on Tariff 15. The time is now for the FCC to give clear direction to the communications industry. ☒

BIG BLUE

BY HUBERTUS VANDERVOORT JR.

NetView users dissatisfied with third-party support

IBM has issued more than 10,000 licenses for its strategic Communication Network Management (CNM) product, NetView, since its introduction two years ago. As a result of IBM's intensive marketing, NetView compatibility has become one of the most significant selection criteria for manufacturers of communications products.

More than 40 vendors have announced or delivered NetView integration products that couple the capability of their proprietary management systems with that of NetView. Yet despite NetView's apparent success, popularity and support by third parties, users are still dissatisfied with IBM's approach and CNM architectures in general.

On the one hand, vendors have been myopic in their implementation of the NetView/PC strategy. They have failed to make the integration seamless and complete. NetView/PC introduced user-defined generic alerts. Yet despite third-party vendor ability to send generic alerts to NetView, NetView is incapable of exerting any of its innate control over the device that is sending the alerts, as it would in a pure Systems Network Architecture environment.

In general, users must still use the third-party network management system console to take any corrective action. Thus none of NetView's automated operation facilities are exploited, its Command Lists are essentially useless and many of its integration benefits are never fully realized. Herein lies the crux of user dissatisfaction.

On the other hand, users have failed to provide vendors with a clear definition of what NetView integration really means to them. Further, they do not thoroughly evaluate the level of NetView compatibility actually offered by vendors.

However, users do not deserve all the blame for this lack of definition. No vendor, IBM included, has defined what NetView integration really means, nor has anyone stated what potential exists in the current offering. Discussion is still needed regarding the level of integration that exists today, the benefits that integration will provide and the capabilities that could be incorporated into the product in the foreseeable future.

Several important trends must develop before users will be truly satisfied with CNM. Users must ask vendors to articulate their level of NetView integration. Vendors too must clearly state their NetView integration capabilities. But more importantly, if they claim to offer NetView integration, vendors must be prepared to demonstrate their level of support.

Users must judge NetView compatibility on four levels. First, they must judge on the ability to interface via simple generic alerting. All current implementations support this method, primarily because it's the easiest to deliver. Unfortunately, most vendors end their support there.

> Much of NetView's architecture remains a source of fear and frustration for users.
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Second is the ability to exert full command control over the integrated system. Users should be able to execute any command from within NetView that could be issued via the foreign systems' native management platform. Few vendors offer this capability.

To date, no vendor has delivered capabilities in the final two areas: the ability to provide fully automated and cooperative distributed control interfaces; and the inclusion of advanced functions such as expert systems or natural language query interfaces. In these matters, developers have missed exciting opportunities for truly value-added capabilities, strong product differentiation and enhanced end-user satisfaction.

Users must educate themselves about NetView. They should seek support from third parties who have studied NetView from the perspective of both the user and the developer. These specialists can assist them in identifying and clarifying the objectives as well as in articulating a well-defined statement of requirements.

In response, vendors will face a significant technical challenge and a task that IBM has not made any easier. Today, much of NetView's architecture remains obscure — a continued source of fear and frustration for users and developers alike. In the near term, vendors capable of creatively overcoming these limitations to deliver all four levels of NetView integration have a significant opportunity to differentiate their NetView integration strategies from other vendors' strategies.

Here again, in addressing these challenges, vendors should seek the assistance of the same third-party support arms that can provide the necessary insight on user requirements, product potential and integration opportunities. Today, many network equipment vendors are not equipped to play in the host-based product development and support arena. NetView customization features, such as Exits, User Tasks and Command Processors, linger as mysterious hooks that few fully appreciate.

Yet embodied within these interfaces lies the opportunity for vendors to begin providing advanced features such as full command control, automatic distributed network management, enhanced data access and expert systems. Vendors bold enough to exploit the potential locked within NetView will offer users the opportunity to truly meet the CNM integration objective.

In the long run, their support of host-based CNM will dictate the success or failure of their own CNM strategies. If a solution is to be found within the window of opportunity, the support of third-party experts is critical.

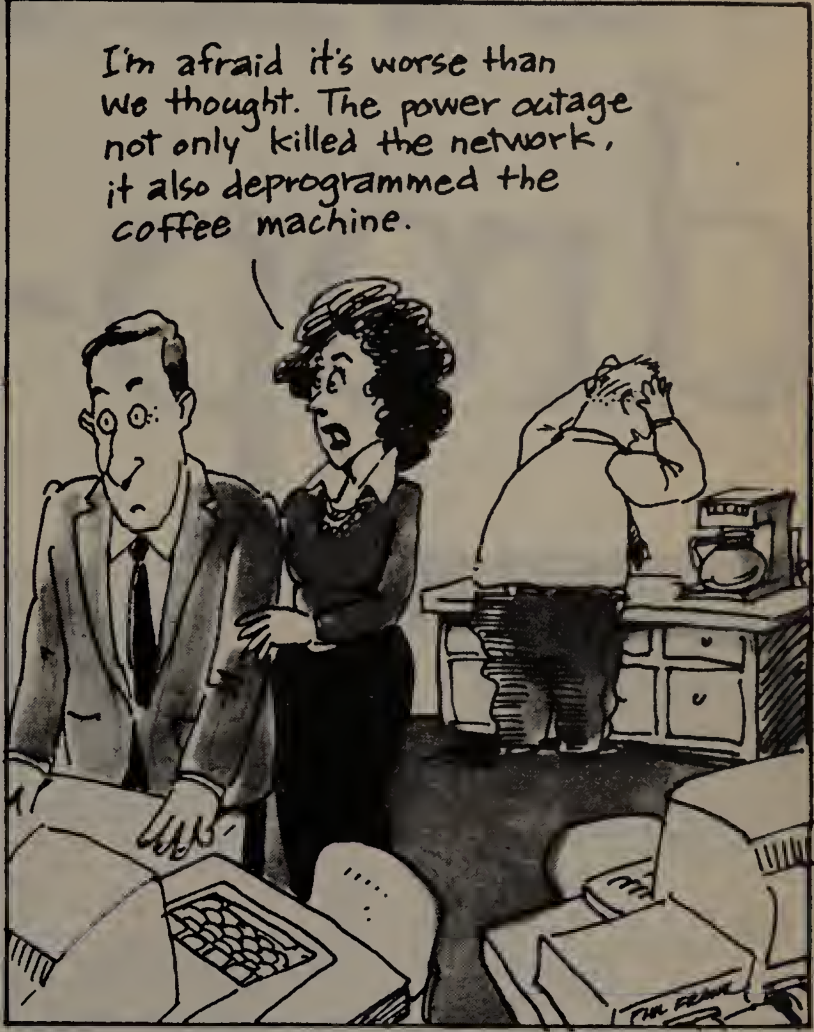
Ultimately, by leveraging the abilities of independent NetView experts to take advantage of these hidden opportunities, vendors will benefit from having truly differentiated features. Users that now license NetView will also start to make significant use of the product as they begin to achieve the results they have sought all along.

However, NetView will never satisfy anyone's demands if users do not clearly articulate their requirements for true NetView integration and vendors do not face the challenge of creatively implementing their own unique and comprehensive NetView integration solutions. ☐

Vandervoort is a senior telecommunications consultant with Computer Task Group, Inc. in Waltham, Mass.

TELETOONS

BY FRANK AND TROISE


I'm afraid it's worse than we thought. The power outage not only killed the network, it also deprogrammed the coffee machine.

LETTERS

Chargeback tips

In the column entitled "The ABCs of squaring up the corporate accounts" (*NW*, Oct. 31), the author listed most of the requirements for chargeback of telecommunications costs to users. I would add the following:

Above all, the process must be simple to understand and easy to administer. Communications managers should be able to clearly answer the two most frequently asked questions users pose:

What components are included in the total costs to be allocated? And how will each cost component be charged back?

For example, monthly line costs can be billed back based on actual usage. Other items, however, such as hardware, software and personnel, are more difficult and usually require some "pro-rata" scheme based on percentage of use.

In addition, the financial accounting for capital items is much more difficult due to issues such as depreciation that certainly complicate the chargeback process.

Besides these two points, I believe the article was very informative.

Kevin McCarthy
Principal
PA Consulting Group
Hightstown, N.J.

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Management Update

Wiring and cabling

Mastering the ropes

By WALTER CHIQUOINE

There is no one right answer to the question, "What kind of cable should I buy?" Many users search in vain for a universal wiring solution. But universal wiring is a misleading term; an ideal system is rarely achieved. A specific type of cable cannot do all things in all situations.

Discussions of the performance of Wire A vs. Wire B do little to solve network management problems associated with wiring systems. Sooner or later, the communications manager must ask two critical questions: What cables and topologies will serve my needs both now and in the future? And what am I going to do with the cable once I get it? The importance of these questions makes premises wiring a management issue.

An ideal wiring system provides a large number of services with a wide range of capabilities. The system should balance cost and performance, and it should operate effectively both now and in the future. It must be designed to accommodate systems from multiple vendors in a flexible layout with few revisions or adaptations. As networks grow more complex and data rates increase, it is inevitable that many networks will exceed the capacity of unshielded twisted-pair cable.

There are two highly visible cable selection trends today. Some network managers, attracted by the simplicity of "one-plug" networking, are downgrading their wiring systems from expensive, high-quality cable, such as coaxial and shielded

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Chiquoine is communications transport consultant with du Pont Cable Management Services, a division of the Wire and Cable Group of E.I. du Pont de Nemours and Co., Inc. in Wilmington, Del. He acts as a consultant for planning and managing premises wiring facilities within du Pont and for major corporate clients.

Choosing a premises wiring system to suit present and future needs is a management problem, not a technical one.

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twisted pair, to unshielded twisted pair or telephone wire. While there is certainly a cost incentive for doing this, there are also hidden costs and inherent performance disadvantages, such as the inability to accommodate increasing transmission rates. It's unlikely that the upcoming 16M bit/sec token ring will operate on unshielded twisted pair.

Other managers are heralding the development and increased use of fiber optics. However, network planners may realize a tremendous savings by deferring that investment for fiber-optic connections to the workstation.

Management is the problem

Due to the tremendous changes in the communications industry, strategic cable selection and management have become primary duties of today's network manager. Wire that was once the responsibility of the telephone company is becoming the user's property (and problem). Increased demands for additional services put pressure on network managers to design systems that accommodate continued growth in voice, data and video traffic. This traffic must be monitored and controlled, adding to the network manager's responsibilities.

In most large user organizations, such as corporations, universities and hospitals, the communications manager is battling an established lack of control. For years, control has been decentralized — separate management of voice and data services being the norm rather than the exception. Fragmented implementation of networks has resulted in few corporatewide or even facilitywide systems. Many systems, therefore, are incompatible. They use different types of cable and perform different tasks with little or no interaction between the diverse technologies.

Managers today continue to battle the unfortunate legacy of inadequate network management. Communications staffs are often small and are forced to spend most of their time "fighting fires," which causes a shortage of resources and information. There are few records of previous and existing wiring systems.

Today, network managers feel the pinch of these missing records as they try to upgrade or redesign their communications networks. Too often, existing wiring systems are abandoned along with the inherent advantages the wiring may have offered.

Cable takes the blame

Corporate management, including communications managers, often tends to blame problems of excessive cost on specific cable types rather than poor cable management. As a budget line item, cable and its installation cost are visible expenses that are vulnerable to attack.

Usually, those attacking the expenditure are unable to discern and manage the hidden costs of cable selection. Some of those hidden costs surface when a wiring system requires significant expense for moves, adds and changes, or transmission limitations cause lost productivity and lost access to technology. Unused cable also contributes to cost.

The relative cost and performance merits of different cable types are convincingly argued by various vendors. Some offer only current capabilities, while others provide for future capabilities as well. Users are understandably confused by the variety of choices promoted by vendors.

Losing track

One of the main problems ignored by most users is abandoned cable. As communications networks migrate from one technology to another, network managers often choose to abandon existing cable and replace it with something else. For this reason, many cable specifiers find the ubiquity of twisted pair for voice appealing, despite its poor transmission characteristics.

Others, tempted by the capabilities of a future fiber-optic system, reject high-quality copper cable. Those who specify fiber optics may find that as work groups move into, out of or around a facility, they will have to reinstall their fiber-optic system, creating the same problem that exists with copper.

Poor record-keeping only makes the abandonment problem worse. Although high-quality data cables can be reused, managers can't reuse lost wire — wire that doesn't appear on their records. This problem is compounded as each user inherits, through deregulation, unrecorded wire previously owned by the telephone company. It is next to impossible to determine who is accountable for the cost of removing cable from congested ducts.

Communications users also blame cable for problems arising from a failure to develop and manage global system requirements. A user builds incompatibility by installing different systems in different departments. When integrating or replacing these poorly managed systems results in high costs, the user automatically thinks that the wiring is the problem.

This perception prompts many users to specify lower cost, lower quality cable as the only cost-cutting solution. With cabling a low priority in corporate planning, it is usually installed as an afterthought.

Corporate planners focus instead on the high-end hardware and slick software they see as the meat of the communications network. They often overlook the need to manage all aspects of the network.

Cable shouldn't be chosen solely on the basis of the lowest installed cost. Managers must consider all requirements within the transport framework of premises wiring. The value of specific cable is evident only within a broader context in which there are many interdependent wiring elements.

Transport importance

The hardware, software and transport systems are the key physical elements in a communications system; each interacts with the others to provide network performance. Specifying one element imposes limitations on the whole system, and trade-offs abound. Lower quality transport tends to increase costs for hardware, maintenance and control. Of the three, software is the easiest to modify or replace.

Transport is not the largest system cost, but most of it is unrecoverable labor; unlike hardware, it has no salvage value.

> The hardware, software and transport systems are the key physical elements in a communications system; each interacts with the others to provide network performance. Specifying one element imposes limitations on the whole system.

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The transport system consists of its own interdependent pieces: cable run, workstation or office interface, and equipment room interface. Each piece consists of several elements, all of which must be managed with equal care. Once again, a decision based on one element influences other decisions.

The workstation or office interface includes the types of jacks needed and the number of services in each office. For example, telephones, word processors, modems and dial-up data lines are different services that require separate jacks.

Within the equipment room interface, there are both distributed control equipment and cross-connection devices. Local equipment eats up floor space and typically requires higher maintenance. Longer cable runs allow more consolidation of equipment. Punch-downs are low-cost and low-tech; patch panels are convenient but bulky. Floor space and layout may become limiting.

The cable run includes the topology type as well as the cable type. A star topology is effective for any system, while a bus topology spreads out equipment and is advantageous if there is insufficient space in the equipment room. It's important to use high-capacity backbone links and watch distances between the transmitter and receiver.

Each cable type has limitations and trade-offs. Unshielded twisted pair is most susceptible to signal distortion and cross talk at higher frequencies; the difference in cross talk between shielded and unshielded pairs may be as high as 35 db at 10M bit/sec, and it increases at higher frequencies. If unshielded twisted pair is used for high-speed data, defenses must be built into the hardware, topology and quality of installation, increasing both the cost and the chance that things could go wrong.

Coaxial and shielded twisted pair have built-in defenses against signal degradation and emissions. They are better media with higher bandwidth capability. Fiber-optic cable to the workstation is even better, but today's cost and maintenance of optoelectronics makes it a questionable investment. The typical workstation of today, or even in the near future, is not likely to need the high bandwidth of fiber optics.

Guidelines

It is possible today to integrate cable selection and management to achieve tomorrow's voice and data transmission requirements. Several guidelines will keep users on the path to a well-managed wiring system:

First, telecommunications managers should present the same interface at each office. They should wire all offices at the same time, with more than one type of cable and jack to each office. Running new cable for each office move costs about 50% more per station.

In all cases, unshielded twisted pair should be used for voice circuits. Shielded 150-ohm twisted pair, RG-58 coaxial cable and 62.5/125-micron optical fiber should be considered for data based on the EIA TR-41.8 wiring specification. RG-62 appears to have a very limited future. Shielded 100-ohm twisted pair is also available and should be considered.

Second, network managers should prepare wiring specifications for procurement, especially for unshielded twisted pair, and should buy the best according to those rigorous specifications. Testing shows that the quality of unshielded twisted-pair cable varies greatly and will affect performance. Manufacturing quality and insulating material play a large role in transmission quality. Therefore, managers should use the best insulating material (code-approved) other than polyvinylchloride (PVC)— they can still take advantage of the RJ-11 or RJ-45 jack.

Shielded cable must be specified and designed to overcome additional attenuation caused by the shield. When writing cable specifications, network managers must insist on certification of electrical properties such as attenuation and cross talk.

Third, managers should control the quality of installation, especially for unshielded twisted pair. Since labor costs are unrecoverable, it's necessary to use skilled installers. Users should have it done right the first time by keeping cross-connections to a minimum, using cable quality to establish the allowable run length and requiring the installer to test and certify circuits before turning them over to the user. Keep the pair count of unshielded wire as low as possible to minimize cross talk; several four-pair cables are preferable to one 25-pair cable.

Fourth, users should not approach record-keeping as a luxury or a nuisance. Require detailed cable records for voice and data and regard both as a single facility. Keep the records up-to-date and use them for circuit assignments through a central facility administrator.

Finally, users should follow safety codes rigorously. Use only cable labeled according to 1987 National Electrical Code requirements and consult the local inspector when necessary.

There are many good answers to the question "What kind of cable should I buy?" Unfortunately, there are no right answers. A high-quality data cable to each workstation will offer capabilities beyond unshielded twisted pair. The growth of installed data cable will drive new technologies to take advantage of it, just as unshielded twisted pair is doing today. Using RG-58 or 150-ohm shielded twisted pair for a Fiber Distributed Data Interface-like drop cable at 100M bit/sec is not unthinkable.

The investment for this high-quality cable will pay off in a longer life cycle if managed properly, especially if a quality system is already in place. Users should implement fiber optics for high-speed backbones that tie together points of local distribution.

Overdesigning a facility that the company will be moving out of in two years or less is not cost-efficient. Deferring the investment and problems of fiber optics to the workstation by maximizing the capabilities and life cycle of copper cable facilities may yield the biggest achievable cost savings.

Whatever the choice, remember that good cable management is the key to realizing full value from a wiring investment. ◼

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Management Update

Wiring and cabling

Getting wired

The right decisions about wiring and system components can make a manager's job easier down the line.

CONTINUED FROM PAGE 1
cable management.

Designing a building wiring system requires a dual perspective. The designer must ensure that each component is complete in itself while also conforming to the goals of a complete building-wide resource.

Wiring system components

Each building wiring system is composed of seven individual components: the station jack, horizontal distribution system, distribution closets, main distribution riser, main distribution frame, network access point and cable management system. Each of these components can be treated as an individual item with its own specific characteristics. In a properly designed wiring system, each can be uniquely configured without affecting the other wiring system components. As such, the user has several options regarding equipment and configuration for each component.

The station jack, also referred to as the universal information outlet or the station termination unit, is the point at which end-user equipment is connected to the building wiring system. This end-user equipment may be voice equipment, such as a telephone

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Carosella and McClimans are managers with Network Strategies in Fairfax, Va. Network Strategies is a practice of Ernst & Whinney that provides telecommunications consulting services.

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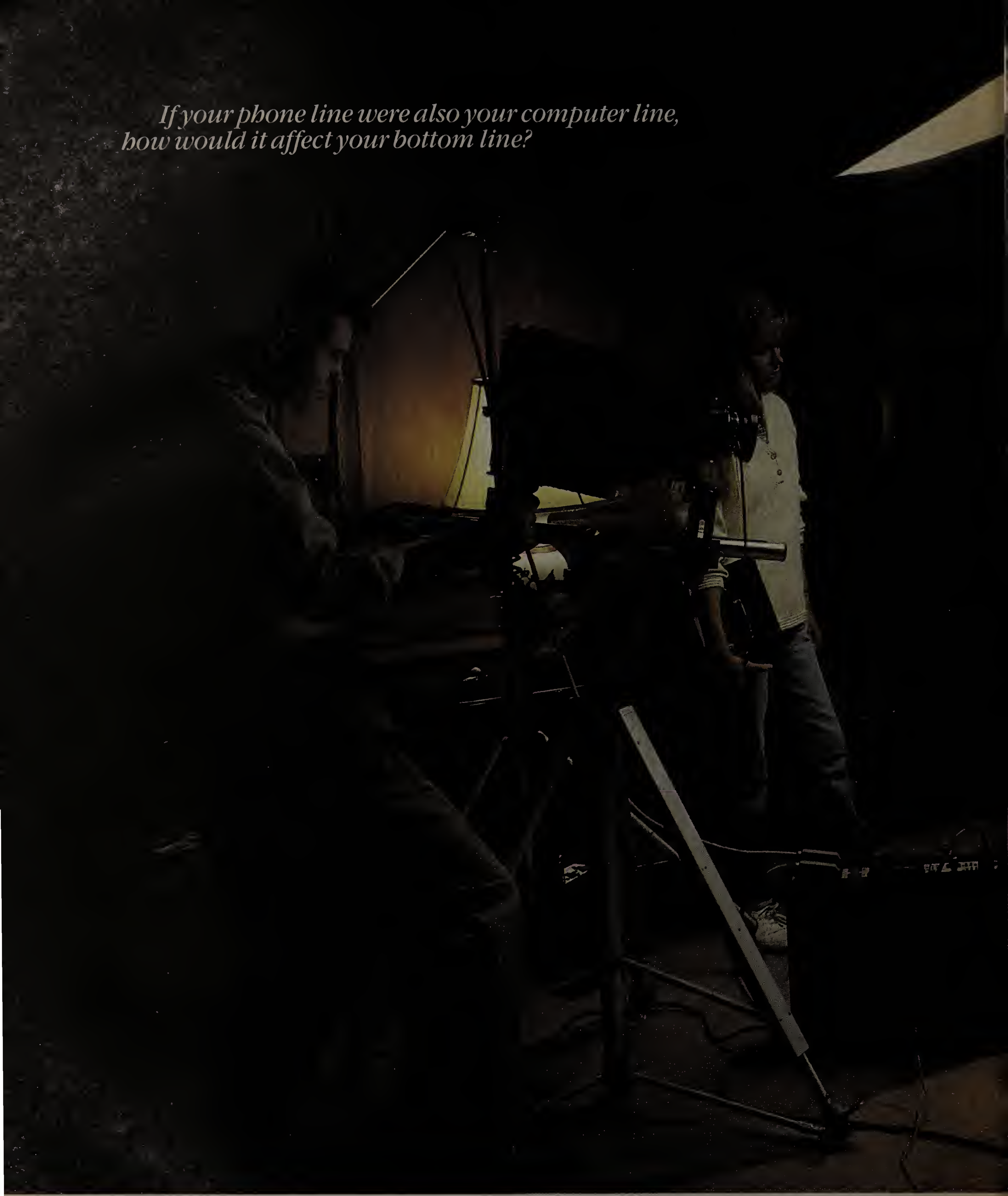
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set, or data equipment, such as a personal computer, terminal or printer. The actual receptacle will terminate twisted-pair, coaxial cable or fiber-optic cable.

In many environments, the station jack may contain a combination of receptacles designed to provide flexibility to the end user. Twisted-pair receptacles are usually RJ-11 or RJ-45 telephone jacks, or some other modular adapter, such as RS-232 or IBM's universal adapter. Coaxial receptacles are almost exclusively BNC connectors, while fiber-optic receptacles offer a wide variety, such as ST or SMA connectors. The key to selecting a station jack is to provide flexibility and plug compatibility with future wares.

The horizontal distribution system is composed of cabling and support hardware that connects the station jack to the distribution closet and the main building wiring system. The horizontal distribution cabling may be fiber, coaxial cable or twisted pair, depending upon factors in the user's application and environment, such as distance and distribution route.

Twisted-pair wiring is generally an inexpensive and flexible way to satisfy most voice and data applications. However, it is somewhat susceptible to electronic noise and has very real distance limitations. Coaxial cable is far more resilient than twisted pair but is more expensive and difficult to handle because of its lack of flexibility. It can also be more costly to maintain than twisted pair. Although coaxial cable can be used for high-speed data applications, it is inappropriate for use in voice systems.

Fiber-optic cable is immune to electrical noise but is still fairly costly to install to the station jack, primarily because of the expensive optoelectronics needed to generate and receive the signals. Fiber costs, however, are dropping steadily and, within five years, may make running fiber to the desk a reality.

Distribution closets typically require detailed configuration planning. In the days before data, the distribution closet was usually just that: a closet with a cross-connect nailed onto the wall and usually complemented with a custodian's bucket and mop. In today's increasingly complex voice and data systems, however, this approach simply will not work. Modern distribution closets should be designed to support controlled ventilation and special power supplies needed to support multiplexing and other data equipment. Plenty of room for growth and spare capacity should also be included in the plans for the distribution closet.

Of course, the old cross-connect decisions still must be made as well. There are currently a wide variety of choices for cross-connect equipment, from standard 66-blocks to numerous modular systems. When selecting a cross-connect system, users should look for a system that is easy to use and compatible with their existing or planned data applications. Although they should never buy high tech for high tech's sake, they should remember that old equipment may leave high-speed data services more susceptible to noise.

The main distribution riser is the backbone of a building wiring system. It provides the interconnection between all the various wiring distribution closets and the main distribution frame. The distribution riser is typically vertical, although horizontal risers are not uncommon in older or uniquely shaped structures.

Similar to the horizontal distribution system, the main distribution riser can be twisted pair, coaxial cable, fiber optics or a combination of the three. Twisted-pair risers are by far the most common, mostly because of a large installed base from predivestiture days. Coaxial cable and fiber are becoming popular as additions to twisted pair to support high-speed data applications.

The main distribution frame is the distribution closet where all building wiring originates. It is at this point that the telephone company wire is cross-connected to the building wiring system. The frame will typically include data or voice equipment, such as local-area network servers or private branch exchange systems. Support for telecommunications equipment will often dictate special requirements for the frame room. Factors that may require in-depth planning include power supplies and their backups, air conditioning, fire suppression, free space and security control.

The network access point is the point at which the telephone company's outside lines enter the building. Although the network access point will have some form of power protection, usually car-

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Managing risk

Pilot and prototype tests can be a safety net for equipment buyers.

By ARIELLE EMMETT

The high-tech testing game has something for everybody. There are pilot tests and prototype tests, alpha and beta tests, tests to assuage customers' fears and tests to work out the kinks of a new product. Whatever the kind of test, its goal is usually to eliminate the risks for users that are acquiring systems.

The principal kinds of high-tech testing involve pilot tests and prototype tests. While industry definitions vary, pilot tests — often simply called "pilots" — generally deal with products that are already commercially available. A pilot test introduces a new technology or service directly into a small, controlled user environment.

In a pilot test, the vendor provides equipment for the user to test and evaluate before winning the user's commitment to finalize a sales agreement. Both parties gamble that they won't spend prodigious amounts of time and money to install and test a system, only to find that it's unsatisfactory and must be dismantled and removed.

Emmett is former editor-in-chief of Communications Consultant *magazine.*

Prototypes differ

Prototype testing is more complex, and there is less agreement about a definition. A prototype can be an unfinished product or a product very near completion. Some consultants say a prototype can be a brand new product introduced in selected user sites for testing prior to the vendor's final commitment to manufacturing.

A prototype can also mean various types of equipment that a vendor will test before making a final choice for manufacturing. Prototype testing generally involves the end user, who may provide data and facilities to help a vendor in the product development cycle.

"When we have something that's ready for a commercial offering, but perhaps we don't know the best way to sell it or advertise it, we do a pilot [at a user site]," says Ken Goodgold, area manager of advanced technologies for Southwestern Bell Telephone Co. in St. Louis. "When you have a pilot, you have someone committed to manufacturing."

By contrast, he says, "A prototype is not a [finished] product, nor has there been any commitment to manufacturing. Frequently, prototype testing yields a decision not to manufacture."

Prototype tests are really tests of products that are in the "alpha" or "beta" stage of development. "There's a fairly consistent industry definition of alphas and betas," says Thomas Nolle, president of CIMI Corp., a Haddonfield, N.J.-based computer and communications consultancy.

"Alpha testing deals with early integration testing of the product," Nolle says, while beta testing is "final integration testing." The products are therefore said to be in the alpha or beta state.

Integration testing, he adds, means that a product is being tested in its entirety, as it would be used, rather than in separate elements.

"Alpha testing is normally conducted in-house," Nolle says, "while beta testing is almost always conducted off-premises, in a live environment.

"The purpose of alpha, beta and prototype tests is to validate the product," he says. "They are part of the product development process, whereas a pilot is to validate the usage of the product in the user's particular environment."

Vendor attitudes

Vendors are generally eager to conduct beta tests that aid them in their product development, but they dislike pilot tests and view them as a necessary evil, according to Howard Frank, chairman of Network Management, Inc., a network integration firm in Fairfax, Va. "Vendors like to sell the whole package up front without constraint," he says. "Anything that gets between the vendor and the sale is seen as a hindrance."

On the plus side, Nolle says, "A pilot test brings together vendor support personnel and user project personnel who are going to have to work together on an ongoing basis."

For that reason alone, a pilot test may have unforeseen benefits, such as forcing users and

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vendors to deal with their own misconceptions about a product's value to a particular business, Nolle says. In addition, pilots can also uncover unexpected problems and personality conflicts before a buyer-seller relationship is set in stone.

Multiple pilot tests conducted simultaneously or serially amount to a "face-off" between competitive vendor products or services prior to a major contract award. A single pilot enables a prospective buyer to check out a relatively new or unfamiliar piece of equipment, software application or service offered by a single vendor. Or a user can put a new or more complex configuration of already familiar components through a pilot test.

Tests simulating real-world conditions are ideal for nets that must eventually operate at higher capacity than will be seen during the first few months of ordinary operation.

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User reasons

Quite often, users push for a pilot test to boost their familiarity with a new product or technology. Pilot tests simulating real-world conditions are ideal for networks that must eventually operate at substantially higher capacity than will be seen during the first few months of ordinary operation. In addition, zealous vendors may arrange tests, especially if the vendor is eager to sell new ideas outside of the market mainstream.

In other cases, testing is driven by unusual user needs — for example, a need for a new Integrated Services Digital Network bridge or perhaps a new application of audio- and videoconferencing technology combining multipoint communications, graphics and sharing of personal computer programs such as spreadsheets and data bases.

"A pilot test would be justified where the approach the vendor wanted to take on a project would be substantially different than that suggested by the customer in an RFP or solicitation," Nolle says. "For example, the customer says, 'I want a minicomputer product,' and the vendor comes back with a proposal of LAN-based PCs. Then the user would need a pilot because the prep work he's done would not apply to the solution the vendor has proposed."

Prototype testing, by contrast, is quite often driven by the need for new products and technologies. For example, a user decides to install a special ISDN local network bridge linking islands of local nets, some of which are connected to ISDN channels and some of which are linked via analog phone lines.

The customer approaches a regional Bell holding company, which in turn arranges with a third party to develop a product specifically for that need. The customer, in effect, becomes an alpha or beta test site, and the product is tested and refined as an unfinished prototype.

Fear of flying

But whether a product is in the prototype stage or has already rolled off the production line, fear of flying may keep some users hell-bent on some form of test, even when such a test is not necessary. Users, more often than not, want a test if they feel doubtful about how well a new product will meet the functional requirements of their business.

"Pilots are ultimately driven by the risk attitude of the customer and their own procurement procedures. What we [the vendors] get out of them are happy customers," says Jeffrey Palmer, vice-president of marketing for BBN Communications Corp., a Cambridge, Mass.-based provider of wide-area network systems.

According to Palmer, users generally want two types of pilots. The first is actually a phased implementation, what he loosely terms a "pilot network," a partial investment in a network taken as a first step toward a major purchase.

A phased implementation is simply a small chunk of a larger project investment from which the user can presumably retreat if the outcome isn't acceptable. "It's typically motivated by the customer or their procurement policies as compared to any inherent limits in our products or ability to deliver," Palmer says.

While user procurement policies usually don't mandate a pilot test, they can sometimes result in one if end users feel they will be held accountable for many details that are beyond their control.

The second type of pilot is a "test network," which is a test bed that is separate from the user's existing network, Palmer says. "People do this to test new software, new application interfaces and new products in an offline mode before they cut over the actual application," he says. "It's actually a further level of integration testing."

Although vendors tend to shy away from pilot tests, they may be easily persuaded to develop a test bed if they feel something will be learned, Palmer suggests. "A test network enables both vendors and users to conduct more radical testing than could ordinarily be done on an operational network used for daily business," Palmer says.

"Basically, a vendor's decision to conduct a pilot depends on how much the vendor wants to make the sale," Nolle says. "The investment in a pilot has to be justified by the profit of ultimate sale."

"Pilots and prototype testing are definitely useful and sometimes critical," says Judith Rosall, a telecommunications consultant for the network planning and design group of the Bank of Boston Corp. "If you're doing on-site software development, for example, the project might be considered risky. Then it would be best to not only prototype the software but also to perform a pilot before an actual rollout of the product takes place."

For a service that may be offered over a large geographic area or to a lot of people, the user may require a pilot test of the service in a small control group. Rosall says that good pilot tests help gauge user reaction, assimilating technologies into an organization while minimizing the trauma of assimilation.

"Testing builds user interest while keeping the program on a small scale for control and evaluation purposes," she says. "For example, if you do a pilot test for electronic mail services, and users try it and it doesn't work, you can end the project without having invested a lot of time and money."

Rosall speaks from experience. While consulting for Pepsi-Cola International, a division of PepsiCo, Inc. in New York, she participated in an international E-mail pilot involving a single vendor and five regional Pepsi Cola International offices in Europe. The test also included post, telephone and telegraph administrations and a small users group composed of 30 participants from New York and Europe.

"We had to install the equipment, train the users and set up the service with the PTTs in each country," Rosall says. "The vendor offered exceptional support for the four-month pilot and paid for their support personnel and service throughout that period. We picked up all our own expenses and paid for our time."

"The vendor will turn a pilot into a technological derby if the user lets him," Nolle says. In other words, the vendor will seduce the user with flashy technology.

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The result? Happy users and a vendor that eventually won the contract. "Without the pilot, we would not have offered the electronic mail services to the regional offices of Pepsi Cola International," Rosall says.

On the other hand, some consultants are worried that users are overdoing it just a bit. "About half the pilot tests users conduct aren't necessary," Nolle says. That's because users are either insecure about learning new technologies or making purchase decisions without ironclad proof they will work, he says.

"Another part is that the vendor will tend to turn a pilot into a technological derby if the user lets him," Nolle adds. In other words, the vendor seduces the user with flashy technology, and users become so enthralled that they lose sight of the need to define clear product requirements and performance standards.

For example, a manager may decide to pilot-test a full-featured private branch exchange that will reduce toll-call charges through least-cost routing. However, he has no idea how to define his performance standards.

In the previous analog environment, the phone equipment did not provide call management reports or break out costs, so the manager has insufficient data to figure out what his savings projections might be. The solution is to come up with at least some rough figures, Nolle advises. "If you know last month's figures and last year's general figures, do some extrapolations," he says. "You should at least make estimates before you do pilots."

Read the label

"I had a client who was going to do comparative pilot testing on Novell [Inc.] and Banyan [Systems, Inc.] LANs," says David Ferris, chairman of Ferris Network Integration, a San Francisco-based reseller of local-area networks. "They'd used an IBM PS/2 Model 80 as the industry-standard platform server, had ordered 2.1 Novell NetWare and were planning to test Banyan in the same hardware environment.

" 'By the way,' we asked them, 'you do realize that Banyan doesn't run on the Model 80 as a server yet?' The client was appalled because they had just assumed Banyan had already made the switchover. When you plan a pilot, you've got to know these things," Ferris says. Wise customers always do their homework before committing to a test, he adds.

According to Vincent DeGennaro, managing director of corporate telecommunications at Primerica Corp. in Greenwich, Conn., users should opt for pilot tests if they require leading-edge applications or have doubts about how well vendor equipment fits their performance requirements. "Vendors probably won't admit to it," he adds, "but they do a lot of pilot testing. The overall objective is to meet the user needs, and the biggest part is to really under-

(continued on page 47)

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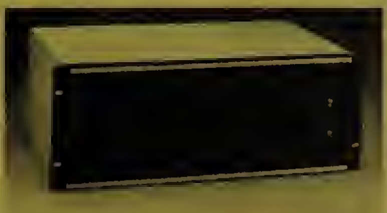

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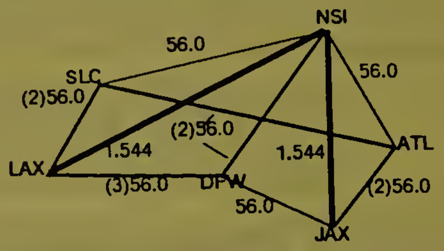

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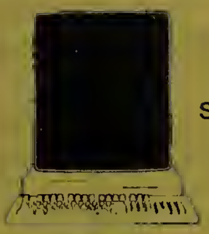

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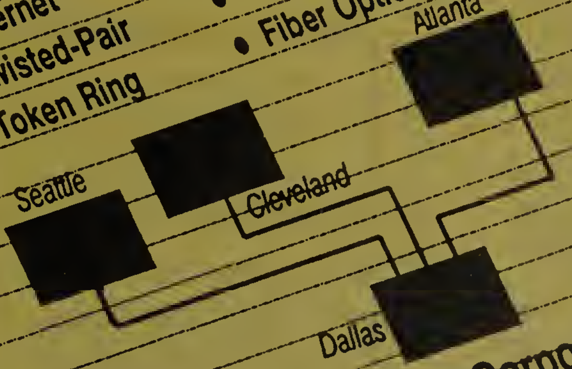

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IBM COMMUNICATIONS DEVELOPMENT

Principal Software Engineer – SNA/UNIX Development Group (DG030)

Responsible for UNIX/SNA product set architecture, functional specification, overseeing digital design, and providing architectural direction to department's UNIX/SNA activities. Possible staff position to department manager, depending on experience level and background.

A BSCS/BSEE or equivalent, approximately 6-8 years' experience in software development and 1-3 years' experience as a lead technical contributor required. UNIX® and SNA experience is a must.

UNIX COMMUNICATIONS DEVELOPMENT

Principal Software Engineer – Transport (DG031)

Design and develop transport protocols for UNIX. Participate in planning the development of ISO and X.25 transport software for a UNIX streams environment, having principal design and implementation role in transport software.

A BSEE/BSCS and 5+ years' system programming experience with emphasis on UNIX environments required. Experience with ISO, TCP/IP, or X.25 protocol desirable.

PC COMMUNICATIONS DEVELOPMENT

Project Leader – PC*I (DG032)

Lead an engineering team through the development of networking products for integrating OS/2, MS DOS, and UNIX environments. Responsibilities include producing development plans, system design, implementation, and product release.

A BSCS/BSEE and 6+ years' systems development experience, with 2+ years' project leadership experience and knowledge of MS DOS, OS/2 or UNIX systems required. A knowledge of MS NET and LANMANAGER desirable.

WIDE AREA NETWORKS

Section Manager & Sr. Software Engineer – Communications Server (DG033 & DG034)

Manage the system development portion of communication/message product set design and implementation. Build communications products for the Wide Area networking market, and assume system design and development and product development responsibilities.

A BSCS/MSCS or equivalent, and 6 + years' experience in development and management of communications or O/S products required for the Section Manager, and a BSCS/BSEE and 3-6 years' communication product-oriented development experience required for the Senior Software Engineer position. In-depth knowledge of communications protocols/messaging concepts and design philosophy required. Experience with X.25/PAD/ISO/SNA/X.400, and system integration desired.

NETWORK MANAGEMENT

Section Manager – Directory Services (DG035)

Lead a development team of 4-6 engineers developing next generation of directory services for wide area messaging and network services.

A BSCS or equivalent, and 4-6 years' product-oriented development experience required. Must be conversant in "C" and familiar with ISO upper layer standards.

Data General Network Services:

NETWORK SERVICES

Network Consultants & Field Service Consultants (DG036)

Provide Network solutions and support for sales, system engineering and field engineering, including consultation in sales proposal, network design and/or implementation planning. Work to identify high potential networking customers, and set up networking seminars at the regional level.

A BSEE/BSCS and 8 + years' computer industry experience, as well as knowledge of competitive products, Data General products, system analysis and hardware communications required. An MSEE/MSCS preferred.

Hardware and Software Engineers

Indentify and functionally tst third party data communications products that complement DG network solutions. Identify and help select LAN/WAN vendors and product based on functional requirement descriptions. Prepare test strategies and test plans, compile and distribute results, coordinate the introduction/evaluation of third party data communication products. Minimum of three year's data communications experience (e.g., test engineers, systems engineers development enginees.)

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Getting wired

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bon block or gas protectors, most wiring system designers recommend additional line protection at the main distribution frame. This is especially true if the frame and network access point are not located within the same area of a building. The access point will almost never house any special telecommunications equipment. Nevertheless, the access point should be in a clean area, free from excessive moisture, dirt and electronic noise.

Cable management

The final component of a wiring system is perhaps the most strategically important: the cable management system. The first element of the management system is the labeling scheme. A standard labeling scheme should be designed to accommodate all the hierarchical relationships of the wiring system elements, including equipment, room and cable labeling, so that all devices can be easily tracked. Such a labeling scheme can employ the use of colors, prefixes and codes to identify different components of the wiring system such as horizontal and vertical cable runs and specific cable locations.

A labeling scheme by itself is not sufficient, however, and should be augmented by either a paper- or computer-based tracking system. Taken together, the labeling scheme and tracking system form a complete cable management system that is useful for both technicians and administrative personnel. Computer-based systems usually require no more than a personal computer and a printer, and typically use an automated data base or spreadsheet to track records. Most off-the-shelf systems available today are tailored to a particular vendor's cabling products.

Care must be taken to ensure that the automated system does indeed cover the full cabling system, especially when using off-the-shelf management systems in mixed vendor environments. Users that can't find a system that fits shouldn't hesitate to develop one themselves. With only a little research, they can program a data base or spreadsheet to provide a customized approach to automated cable management.

Paper-based systems can also be made to order since they require only a pencil and some customized forms. In any case, procedures must be laid out and followed to ensure that the management system consistently reflects the configuration when installations, moves and changes occur.

A standard for wiring

Developing a wiring plan is the first step to wiring intelligently. But planning shouldn't stop there. The next step for the more forward-thinking manager is the development of a telecommunications wiring standard.

Unlike a single plan that addresses a specific location based on a well-defined set of requirements, an organizationwide wiring standard can ensure that future communications projects have a consistent base in the underlying transmission media. A good wiring standard will provide guidance to wiring system designers, design architects, cable management personnel, office management and space planners, from original building design through installation and ongoing management.

Typical items of a wiring system that can be standardized include station outlets, cross-connect equipment and the type and quantity of distribution and riser cables. Station outlets, especially, should be standardized across an organization. By doing so, end-user equipment interfaces can be standardized, as can the associated connection cables. End-user equipment can then be added or moved easily across the organization without the headache of making special cables or buying adapters. Thus the setup process for a new user station is eased significantly.

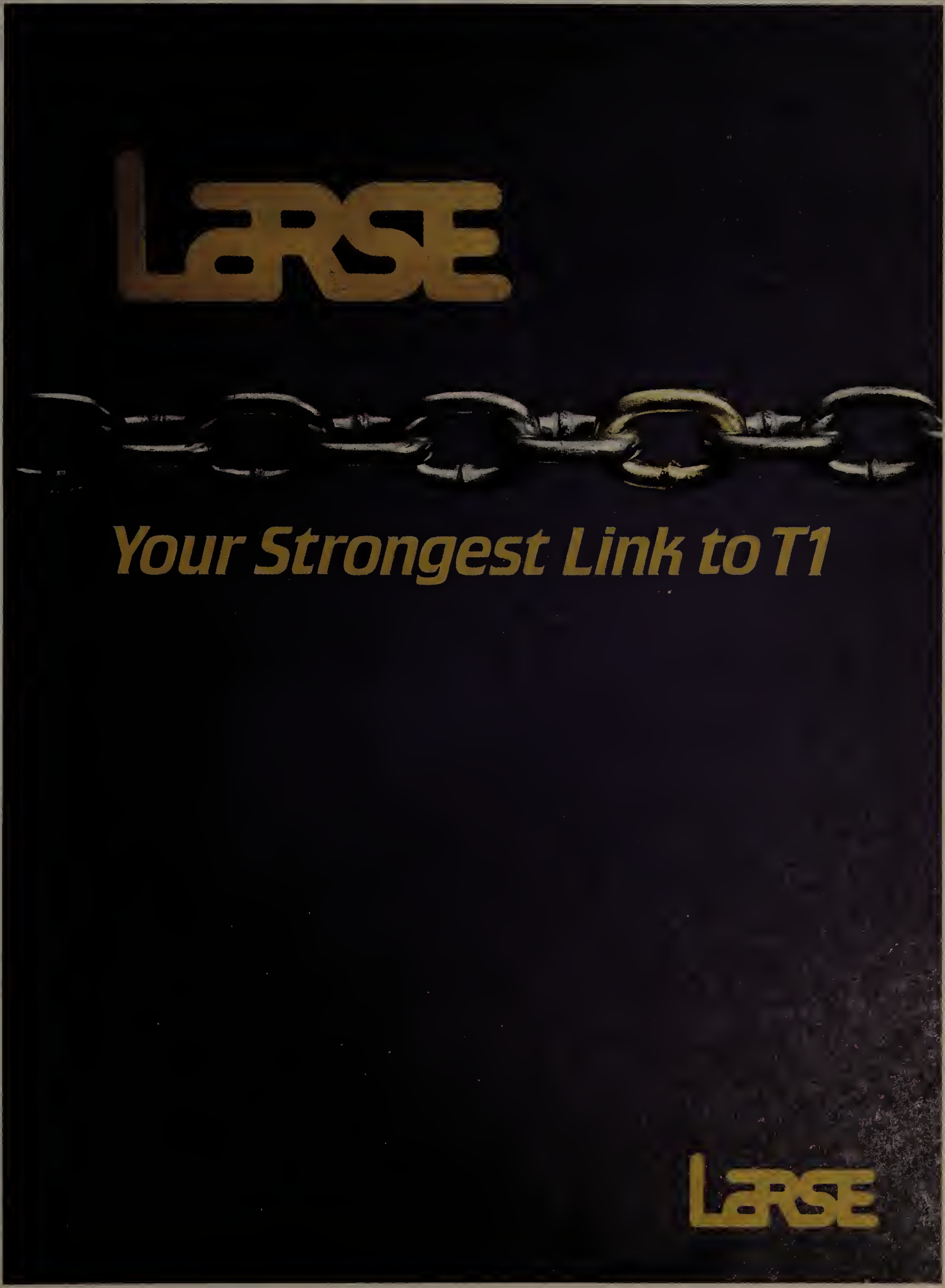
Standardizing the cross-connect equipment (and even the intermediate distribution frame layout) helps immeasurably, especially when troubleshooting in a building that is not the user's home court. The user that must fill in for the absent wiring manager of another building finds the job much easier. All wiring closets look exactly the same, the locations of risers, stations and system blocks are identical, and, of course, the labeling convention is at least the same, if not completely up-to-date.

The cable management system should also be standardized across the organization. This will likely engender discussion in the company, with managers of more complex user environments desiring a more sophisticated system and users and managers of simpler equipment seeking a less complicated system. Compromise must rule here, along with strict and frequent pressure from above to ensure that a common system is used, and used consistently, across the organization.

Standardization, when done properly, can cut cabling costs through up-front planning and the development of a physical resource that can serve multiple systems without the need for expensive recabling.

A standard can also identify options and provide guidance for when to choose which option. In this way, flexibility is built into the organizationwide standard for accommodating special architectural cases without leaving the door open to totally ad hoc wiring configurations. A solid standard will also address finer details of a wiring system, such as specific distribution closet specifications and methods for cable distribution, including sizing and layout.

The development of a wiring standard can be used as part of a strategic plan for all forms of telecommunications systems. Such a plan is designed to map communications strategies, including the implementation of large-scale or specific systems, and a properly developed wiring standard can ensure that building wiring facilities will always be able to support that plan. ◼



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Managing risk

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stand what the need is."

Primerica has had some disappointing experiences with testing in the past. On one occasion, the company tested a new system of user authorization codes, part of a net management system the vendor was developing in conjunction with Primerica. "We were participants in the development," DeGennaro says. "So we accepted it on this premise; it was a no-cost trial."

However, the system didn't work as it should have, he says. Ultimately, Primerica accepted — but did not pay for — a version of the product. But DeGennaro acknowledges that technical problems still exist and neither he nor the vendor is entirely happy with the product.

What it costs

Because of the risks involved in pilot testing, users and vendors play tug-of-war over costs. The general rule is that whoever wants the pilot most pays the most. Users foot the bill if they want the pilot to assuage their technological fears, notes Nolle, while vendors have to bear the costs if they're using the pilot to push an avant-garde solution.

Yet there are strange exceptions to the rule. Ferris, for example, notes that the local net market is so good that "if a customer wants something for free, we'll tell them to fly a kite." His clients often engage in what he calls "conditional pilot testing," in which they technically purchase a trial system but have 30 days to get their money back.

"If you're serious, we say, 'Put your money where your mouth is,' " he says. "At the same time, we don't actually give them back their money, we just don't take the money from them in the first place," a situation made possible by 30- to 90-day billing cycles.

Ferris says that corporations often purchase a smaller system for a pilot test, delaying a larger purchase until they are satisfied. "User costs range between $4,000 and $40,000 for a typical pilot [in the local net arena]," he asserts. This includes the equipment costs but excludes manpower investment, which makes a pilot more realistically cost between $12,000 and $60,000.

Vendors spend between $7,000 and $11,000 for a pilot. "That's for shipping, countless trips to the user site to look at problems and for swapping out parts to improve performance," he says.

Cost estimates for other types of pilots vary tremendously. According to Network Management's Frank, "A pilot can cost half a million to a million dollars for a $5 million to $10 million system." Prices vary according to the equipment and support required, labor costs and the length of the test.

Frank recalls that he was once involved with a $30 million contract for which the government had selected two suppliers to compete. "We spent a million just building the prototype and the pilot," he says. "Frankly, it was a million well spent because we won it; but if we'd lost it, it would have been a million in the garbage."

Caveat vendor

Practically every savvy telecommunications consultant can spin a yarn about a vendor that willingly put up big bucks for a pilot and lost its shirt in the bargain.

But Chuck Garrison, vice-president of telecommunications for the Chicago Board Options Exchange, says that's all part of negotiations.

"We have to interest the vendors but be very careful not to legally obligate ourselves to something we can't live with. And you don't want to lead a vendor on when it's unrealistic," he says.

Garrison is in the process of pilot-testing a telecommunications service. Currently, his options are to purchase or lease all or part of the equipment from vendors participating in the pilot.

"The project would provide voice communications as well as data communications on a broadband basis from Chicago to New York at about half the price of an individual private line," he says. "At present, we're testing DS3-level pipes." Vendors involved in the project hope to attract all 435 exchange members to use the new service — a hefty source of patronage.

"Costs are open to negotiation," Garrison adds. "It depends on how far outside the mainstream your needs are and how accommodating the vendor can be. I'd expect the vendor to pick up the majority of the cost if it's something he's trying to educate you about."

Although Garrison has invested many man-hours in his pilot, he says, "The vendors have contributed probably 10 times the amount of man-hours plus the use of their equipment."

Not every deal works that way, however. Managers at user companies need tough negotiating skills to woo a vendor into a pilot, especially when the project is big, expensive and difficult. "They've got to see what they're going to get from it, and you've got to somehow get them into it, which is a real skill," says Bank of Boston's Rosall.

When the client is a Fortune 100 or a big multinational firm, vendors that want their business tend to go all out. When the client is smaller or if vendors are competing in simultaneous or sequential pilots, users may need to roll out the red carpet.

The wooing process

The process generally starts when a potential client sends out a request for information and the vendors see what the requirements are. They respond, but "it's not a bid, although they are bidding in a sense," Rosall says. From then on, the serious negotiating takes place, resulting in the pilot, preferably at little or no cost to the user.

> "A pilot test has to be conducted using operating personnel," says CIMI's Thomas Nolle.
>
> ▲▲▲

But Jeffrey Lipton, director of office support and telecommunications services for the University of Colorado in Boulder, says he doesn't think pilots always work to the advantage of the user. "The vendors really have to be willing to make the investment in additional support," he says. "If the vendor commitment isn't there, it's not a good situation for a customer."

Nor is it always an inexpensive one. "In most cases, you do pay for the product; and if you do a beta test, you may get preferential pricing if the product ever comes to market — but it's usually not that preferential."

Lipton once participated in a pilot of AT&T's Information Systems Network, which became the University of Colorado's packet-switched network. His verdict: Vendor support was excellent.

"But one of the problems was that AT&T personnel were learning about the product at the same time we were." When problems arose, AT&T went back to Bell Laboratories for answers. "If that kind of commitment from a vendor isn't there, it's not worth the pilot," he says.

When vendors look to clients to test new prototypes of equipment or services, they are asking the client to blaze a trail. But quite often the vendor risks as much or more than the user.

A case in point is Nynex Corp.'s recent beta tests of V-Path Customer Network Service, a virtual private network. If regulatory approval is won, V-Path will provide networking services to corporate customers in the downstate New York and New England (except Connecticut) local access and transport areas at rates competitive with or better than those for private networks, Nynex claims.

"We've spent a lot of money defining and implementing a new service in terms of hardware and software components," says Charlie Duffy, V-Path product manager for New England Telephone and Telegraph Co. "In our situation, the end users [in beta sites] don't spend a dime; they're using the service in lieu of existing services they're paying for."

While vendors try to sell finished products directly whenever possible, they strongly favor beta and prototype testing, which Duffy says provide a direct migration path to a customer's heart — and pocketbook.

"We really want to exercise the network and make sure it performs up to spec, which it has," Duffy says. "The other advantage of trialing is to get much-needed customer input on what can be done to make the service more attractive. You get market input by having any type of trial."

Advice for users

"The user manager has to be a systems integrator," Frank says. "He has to know project management and understand the integration of software and hardware, and he needs to know the products backward and forward."

If the organization is small and lacks integration expertise, Frank says, "Most likely, you should not buy from a vendor that will set up a big pilot test. You should go through a systems integrator who will do it for you.

"The systems integrator has to solve the problems. He is responsible for selecting products and working with vendors, and has a substantial amount of experience that the user doesn't have," Frank says. When a pilot is conducted, systems integrators act as the user's agent, he adds. The integrator is responsible for recovering any monies involved and getting out of contracts if the pilot yields unsatisfactory results.

Nolle, however, advises against having a systems integrator conduct a pilot for a user. "The experience gained by a pilot is valuable experience. It should be accrued to the organization, not a third party," he says.

If a user opts for a pilot, the test should be limited to only the doubtful aspects of a particular technology or service, Nolle adds. Don't use temporary personnel or consultants to man the project either. "A pilot test has to be conducted using operating personnel," he says.

"They're going to be exposed to the system in a transitional state" and ultimately will be the ones responsible for running the new equipment or application.

Is it wise to conduct simultaneous pilots of vendor equipment? Most consultants think not. "It's better to pilot multiple vendors in sequence, not simultaneously, especially if it's a new technology," Rosall says. "Otherwise, a larger testing group is needed, and you may end up confusing the end users."

"To ask vendors to do competitive [pilots] of smaller commercial systems is unfair," adds Frank, although he acknowledges that simultaneous tests of large systems occur all the time. "The user should select a single vendor based on RFPs and internal evaluations, and if there's a risk in the system, then do a pilot." ◘

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Rockwell connects LANs over T-1 net

continued from page 15

and a smorgasbord of other vendors' computers and workstations.

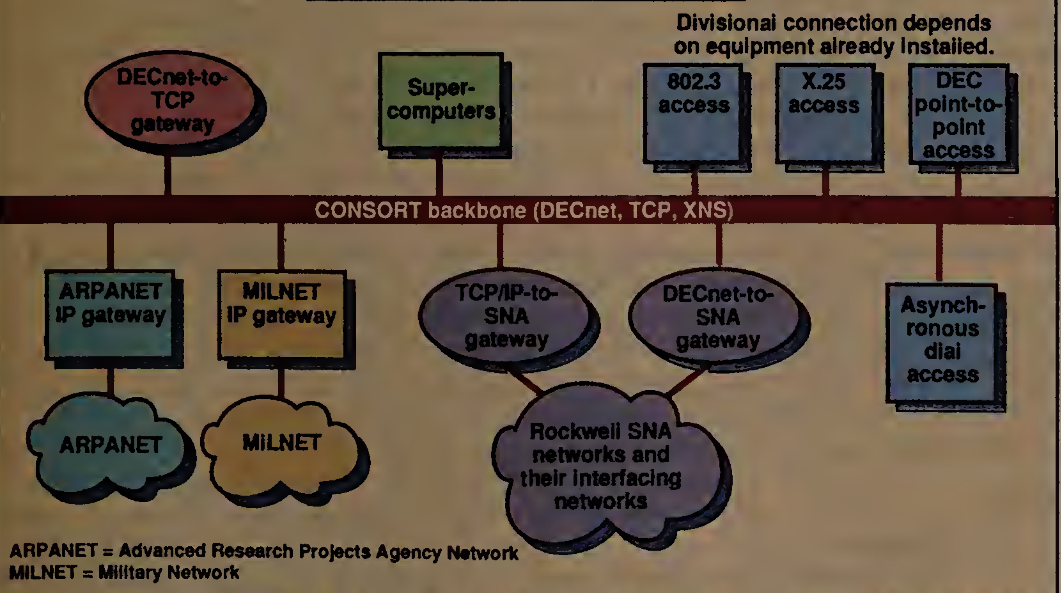
When divisions needed to communicate outside of their domains, they took matters into their own hands. "The divisions were connecting themselves," Sickles said. "They'd call up the telco and order an analog circuit for two sites."

But this commendable initiative had its drawbacks. "Unfortunately, the divisions aren't really equipped or staffed to get into the long-haul data-transfer business," Sickles said. The typical result was that inadequate facilities were installed for the job, constraining network throughput and performance.

Finally, as TCP/IP local nets spread, their users began requesting access to remote local networks and IBM data. For TCP/IP users, SNA was another world.

"Our objective was not just to connect the divisions but to provide them with a capability — in the form of gateways and bridges — that they generally couldn't afford on their own," Sickles said.

CONSORT logical links


Divisional connection depends on equipment already installed.
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Super-computers
802.3 access
X.25 access
DEC point-to-point access
CONSORT backbone (DECnet, TCP, XNS)
ARPANET IP gateway
MILNET IP gateway
TCP/IP-to-SNA gateway
DECnet-to-SNA gateway
Asynch-ronous dial access
ARPANET
MILNET
Rockwell SNA networks and their interfacing networks
ARPANET = Advanced Research Projects Agency Network
MILNET = Military Network

CONSORT routes local Ethernet traffic over Rockwell's T-1 backbone and logically presents a series of gateways and access points to local users at any divisional site.

GRAPHIC BY SUSAN SLATER

SOURCE: ROCKWELL INTERNATIONAL CORP., SEAL BEACH, CALIF.

The first project in this effort was an attempt to link workstations and supercomputers on TCP/IP nets with SNA resources via an Advanced Computer Communications, Inc. bridge. The bridge attached to an IBM mainframe channel on one side and to an Ethernet on the other. The IBM mainframe appeared to remote workstations as a TCP/IP node.

A little more than a year ago, the data network group was given the go-ahead to implement a similar corporatewide internet strategy over the firm's T-1 backbone.

This backbone supports both voice and data and ties the company's two main computer centers — one here and the other in Richardson, Texas — with a third, smaller site in Cedar Rapids, Iowa. SNA data traffic is supported by four 256K bit/sec data subchannels on the backbone.

A 128K bit/sec slice of the SNA backbone is devoted to CONSORT. Data is routed over this pipe by Vitalink Communications Corp. TransLAN bridges at each of the three backbone nodes.

The TransLAN bridge is a protocol-transparent device that connects multiple Ethernet or 802.3 local networks and performs the path control functions usually associated with routers. TransLAN supports a mesh network configuration and features a direct connection to a T-1 data service unit.

TransLAN links Ethernets at backbone node sites to local networks at remote divisions. The speed of the communications links used to access the backbone varies according to the need, ranging from 56K bit/sec to 256K bit/sec. At each division, the bridge attaches to that division's local network, which could employ TCP/IP, DECnet or Xerox Corp.'s Xerox Network Systems protocols.

CONSORT's gateways are essential for achieving two-way information exchange between different environments. With one gateway, DEC terminal users can sign on to SNA hosts as SNA devices. Conversely, IBM 3270 terminals can access VAXes as DEC terminals. CONSORT also supports gateways between TCP/IP and DECnet, as well as between TCP/IP and SNA.

Divisions that have only DECnet traffic use DEC's own router as a less expensive, slower alternative to the gateways.

Under the CONSORT umbrella, Rockwell's Telecommunications Services group also provides divisions with other wide-area network options, including asynchronous lines and X.25 support. CONSORT will provide whatever wide-area connections are needed to support the local divisional computing and networking environment, Sickles said.

Next year, Rockwell plans to add CONSORT gateways to access the Department of Defense's Advanced Research Projects Agency Network and Military Network.

Division input

The divisions had an early voice in the network's design. In preparing the initial plan, Sickles' designers were hampered by their lack of experience with the world of distributed computing. "We recognized that my staffers are SNA experts and had trouble spelling DEC and even more spelling TCP/IP because it was longer," he said.

Sickles tracked down people in each division who were familiar with local network technology and arranged a series of videoconferences to review the proposed design. The divisional staff members, some of whom were initially suspicious, had plenty to say.

The meetings underscored the need for the corporate staff to have a better knowledge of TCP/IP. Sickles hired an outside expert to provide a three-day crash course in the networking protocol and invited divisional staff to attend as well.

Despite its high-profile development and implementation, Sickles' goal is to have CONSORT fade into the background.

"What we try to do is make the location of the computer application invisible to the users," he said. "It shouldn't matter to them whether it's in Dallas or Seal Beach. Or even in South America."

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Hayes unveils V.42, X.25 modems

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In keeping with its stated intent to support international standards, Hayes built LAP M and MNP into its V Series Smartmodem V.42 offering, said Gary Betty, a Hayes senior vice-president.

Hayes had originally opposed MNP because it was created by a competitive modem maker and was not an accepted standard, analysts said. Even though the protocol had since been adopted by the CCITT, observers speculated that Hayes would not include MNP in its V.42 modem.

"This is convincing evidence that a full implementation of V.42 will become pretty much standard for all vendors," said Josh Gonze, a data communications analyst with International Data Corp., a market research firm in Framingham, Mass.

Existing V Series Smartmodems support the bit-oriented LAP B error-control protocol as well as adaptive data compression, which increases the throughput of V Series Smartmodems by replacing repetitive strings of bits.

Hayes will supply a read-only memory chip that will enable users of existing V Series Smartmodems — which support CCITT V.22, V.22bis and V.32 standards — to upgrade to V.42 or X.25 V Series Smartmodems. V Series Smartmodems transmit asynchronous or synchronous data over dial-up lines at speeds of 2,400 bit/sec or 9.6K bit/sec.

But even though Hayes may beat its competitors to market, users might not rush to buy V.42 modems, analysts said. "If your MNP modem is currently giving you zero errors, there is very little improvement you can get out of going to V.42," said Larry Cynar, a data communications analyst at Dataquest, Inc., a research firm in San Jose, Calif.

With no apparent immediate benefit, only first-time high-speed modem buyers or those looking to replace aging modems will lean toward V.42, Cynar said.

X.25 support

The new X.25-based V Series Smartmodem has been in development since Hayes announced the modem series in July 1987. The X.25-based modem supports a single X.25 dial-up link.

The modem is intended to be used with the dial-up X.25 access services that many public packet network carriers now offer. Those carriers include CompuServe, Inc., Telenet Communications Corp. and McDonnell Douglas Network Systems Co., which offers Tymnet.

Hayes also released Version 1.1 of Smartcom III and Version 3.1 of Smartcom II communications software for the new V.42- and X.25-based V Series products.

Users with V Series Smartmodems can upgrade to either V.42 or X.25 for $50.

V Series Smartmodems supporting V.42 or X.25 range in cost from $849 to $1,299, depending on operating speed.

Purchased with a V Series Smartmodem, Smartcom III software costs $100. Purchased separately, Smartcom III software is priced at $249, and Smartcom II software costs $149.

Messaging device sends via wiring

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Although some telephone systems offer similar LCD displays, Sukonek said he found those systems, as well as voice mail and E-mail, much more expensive than Omninote. Also, since it works over alternating current, an attorney can take the Omninote into a meeting, plug it into a wall socket and continue to receive messages without being disturbed.

Dick Biersch, director of advertising for Telautograph's marketing services, said the product can complement voice mail and E-mail by eliminating many internal phone calls. Also, since the device is not computer-based, users do not need to boot up or perform other preliminary tasks before typing a message, Biersch said.

Each Omninote unit costs $870, and the CPU costs $1,070.

For more information, contact Telautograph at 8700 Bellanca Ave., Los Angeles, Calif. 90045, or call (800) 848-1987.

Users could lose in tariff fight

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ploys to levy carrier-like access fees on private networks managed by carriers, systems integrators or other third parties.

The outcome could make third-party network management services more expensive or at least hamper efforts by the long-distance carriers to compete in this market.

"This case is simply the beginning of what will become a big issue over the next decade," said Jeffrey Rohlfs, principal with Shooshan & Jackson, Inc., a Washington, D.C.-based telecommunications consulting firm.

"The bottom line is that users will pay more to have someone else manage their networks," said Gerald Mayfield, president of the Stamford, Conn.-based consulting firm DMW Group, Inc.

But some disagree. "This strikes me as a unique contract in a unique regulatory environment," said Dalia Anysas, a specialist in direct access pricing with Ameritech Services, Inc. "I wouldn't expect to see something similar elsewhere."

AT&T won the five-year, $259 million Texas network contract last year in competition with Claydesta Communications, Inc. and LDX Net, Inc. (now Williams Telecommunications Group), which was teamed with Southwestern Bell.

The leased-line net AT&T installed connects state offices in Texas, supporting intrastate voice and data traffic and access to interstate long-haul services.

At the heart of the dispute is AT&T's claim that it should be able to use special access trunk lines to link private branch exchanges it installed in state offices to the local exchange.

Southwestern Bell refuses to give AT&T these lines, however, saying they are tariffed for end-user use only and not for carriers.

Instead, Southwestern Bell is offering AT&T Feature Group A trunk lines tariffed for carrier use. Feature Group A lines are more expensive than special access trunk lines. In this case, the added expense for AT&T will range from $13 million to $35 million over the length of the contract.

Carrier nets and private nets

The debate between the carriers centers on the distinction between what constitutes a carrier network and what constitutes a private user network.

In the Texas network, for example, AT&T built and staffs a network control center for the state. It also handles most of the day-to-day administration of the network. In addition, the PBXs AT&T installed are directly linked to AT&T's points of presence, which, Southwestern Bell argues, makes them simply an extension of the long-distance carrier's network.

This means, according to the regional Bell holding company, that they should be regulated and priced like carrier facilities.

"The PBXs carry mostly AT&T traffic, and AT&T will pay for the access lines," said Gene Springfield, division manager of rate administration for Southwestern Bell. "Of course we see them as part of AT&T's net."

AT&T disputes this claim.

"These PBXs handle strictly traffic from state offices, and they reside on state premises," said Steve Kail, district manager of regulatory relations for AT&T. "Of course they belong strictly to the state."

State safe from higher rates

Regardless of the outcome of this dispute, the state of Texas is protected from any rate increases. "We signed a flat-rate contract, and we've got an army of lawyers ready if AT&T asks for more money," said Carl Stringfellow, director of telecommunications for the state.

If Southwestern Bell prevails, long-distance carriers could end up increasing rates they charge for similar contracts in the future. In this contract, for instance, AT&T was the lowest bidder by nearly $7 million, but it was also the only carrier to bid special access trunks and not Feature Group A lines.

In the words of Belden Menkus, an independent consultant in Hillsboro, Tenn., "AT&T may get burned once on this, but you can be sure they won't get burned again. ◘

Florida net links police crime labs

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The data base will also match new evidence data with data from unsolved cases, he said.

Each of the six labs will have an NCR Tower minicomputer linked to the NCR 9800 via a dedicated line. The department has not decided what speed it will use, Sheridan said.

Linked to each Tower computer will be a combination of NCR 3390 personal computers and NCR 4970 data terminals, as well as personal computers, terminals and workstations from other vendors. Each Tower 650 computer with an extension cabinet can support up to 128 devices.

The net will support crime lab software from NCR and Century Analysis, Inc. net management software, Sheridan said. The management software supports MS-DOS and Unix applications.

Once the network is up, the department hopes to allow local law enforcement agencies, including police stations and district attorneys, to access information about evidence or specific cases from the local crime lab's Tower computer. They will be able to do this by dialing in via a personal computer equipped with a modem.

Looking toward the future, Sheridan said the Florida crime lab network could become part of a nationwide network of crime labs and law enforcement agencies coordinated by the Federal Bureau of Investigation. ◘

Calendar

Nov. 29-Dec. 1, Dallas — UNICOM 2 Expo and Conference: Building Bridges to the Integrated World. Contact: North American Telecommunications Association, 2000 M St., Washington, D.C. 20036.

Nov. 29-Dec. 1, Washington, D.C. — National Connectivity Symposium. Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810; (508) 470-3880.

Nov. 29-Dec. 2, McLean, Va. — OSI Product Integration Conference. Contact: Corporation for Open Systems, 1750 Old Meadow Road, McLean, Va. 22102.

Nov. 30, New York — Voice-Data Integration in the Trading Room. Contact: Waters Information Services, Inc., P.O. Box 2248, Binghamton, N.Y. 13902; (607) 772-8086.

Nov. 30-Dec. 2, Washington, D.C. — Communication Skills for Technical Managers. Contact: John Valenti, Integrated Computer Systems, 5800 Hannum Ave., Culver City, Calif. 90231; (800) 421-8166.

Nov. 30-Dec. 2, Key Biscayne, Fla. — The 1988 Small Business/Home Office Market Conference. Contact: CAP International, Inc., One Longwater Circle, Norwell, Mass. 02061.

Dec. 1-2, San Francisco — Telephone Systems Selection. Contact: Institute for Advanced Technology, 1450 Energy Park Drive, St. Paul, Minn. 55108.

Dec. 6-8, Dallas — Practical T-1 Networking Seminar. Contact: International Telecommunications Association, 12750 Merit Drive, LB-89, Dallas, Texas 75251; (800) 422-4636.

Dec. 7-9, Toronto — Communication Skills for Technical Managers. Contact: John Galenti, Integrated Computer Systems, 5800 Hannum Ave., Culver City, Calif. 90231; (800) 421-8166.

Dec. 8-9, Toronto — Preparing for ISDN: Business Implications of a Technical Revolution. Contact: Angus TeleManagement Group, Inc., 1400 Bayly St., Pickering, Ont. L1W 3R2, Canada; (416) 420-5050.

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SQL takes on key role in local nets

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management. With this approach, workstation applications — the clients — issue SQL commands to access information in common data bases housed on network servers.

The migration to a client-server architecture will likely spur development of powerful new applications and squarely position local net DBMSs as rivals to minicomputer-based systems.

At Comdex, a number of vendors announced or displayed products built to a client-server data base architecture:

- Ashton-Tate, Microsoft and seven other software vendors demonstrated microcomputer applications that work with SQL Server, a local network data server jointly developed by Ashton-Tate, Microsoft and Sybase, Inc.

In that demonstration, microcomputers running Ashton-Tate's dBase IV; Borland International, Inc.'s Paradox; Information Builders, Inc.'s PC Focus; DataEase International, Inc.'s DataEase; and Popkin Software & Systems, Inc.'s System Architect SQL-View data base applications, as well as Microsoft's Excel spreadsheet, concurrently accessed data stored in a single SQL Server data base running on an OS/2-based microcomputer. Another microcomputer running Synex System Corp.'s 4 Views Plus, an add-on data access product for Lotus Development Corp.'s 1-2-3 spreadsheet, accessed SQL Server-resident data.

Those applications were developed using a prerelease version of the SQL Server Network Development kit. Final versions of that development kit began shipping last month.

Ashton-Tate and Microsoft also announced a training program to help developers work with SQL Server. They said SQL Server will ship next April.

- IBM demonstrated data base applications that work with OS/2 Extended Edition's Database Manager configured as a data base server. But it was also using Comdex to recruit developers to build additional applications. "What we want to see is a mix of front-end applications working with our SQL server," said Mike O'Dell, IBM's product manager for local net systems.

LAN DBMSs will rival mini-based systems.

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- WordTech Systems, Inc. announced that it will develop a new version of its dBXL that will work with Novell, Inc.'s NetWare SQL data base server. WordTech's dBXL is a personal computer-based data management product that is compatible with Ashton-Tate's popular dBase data base language. Users with existing dBase applications will be able to migrate to the new version of dBXL.

In addition, Novell announced that NetWare SQL will ship next month.

- Oracle Corp. announced a program aimed at encouraging developers to build applications that work with its SQL-based Oracle Server.
- Borland International announced that it will develop versions of its Paradox DBMS that work with SQL Server, NetWare SQL, Oracle Server and the SQL-based Database Manager component of IBM's OS/2 Extended Edition. Database Manager enables microcomputers to support a local or shared DBMS. It also lets users access data on larger systems using SQL.

A client-server view

In a client-server architecture, the client application runs on local net-attached microcomputers. Requests for data are transparently converted to SQL commands.

The client software then establishes a program-to-program link with the data base server. The data base server processes the SQL request and passes data over the network to the microcomputer, which loads the data into the application.

In the future, data base servers will support links to mainframe or minicomputer resident data bases. "That's the direction that everyone with an SQL engine is talking about going in," said Nancy Woodward, vice president of Novell's Development Products Division, which is responsible for NetWare SQL.

Novell announced NetWare SQL will ship next month.

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Each of the vendors with data base server products took a different approach to implementing the server software.

SQL Server from Ashton-Tate and Microsoft runs under OS/2 and Microsoft's LAN Manager. It uses OS/2's Named Pipes, which is a way of transparently establishing a program-to-program link between the data base client and server.

Novell's NetWare SQL, on the other hand, runs under Novell's NetWare. NetWare SQL will initially support DOS- and OS/2-based client applications supporting NetWare SQL Requestor, which establishes a program-to-program link between client and server.

O'Dell said IBM intends to use Extended Edition's Database Manager component as a data base server instead of its LAN Server, which supports network services such as file- and printer-sharing and electronic mail.

Currently, client applications can use IBM's Network Basic I/O System to link to a Database Manager server running on an IBM Token-Ring Network.

O'Dell said IBM will enhance Database Manager next year to support Remote Data Services. This will enable client applications to link to a Database Manager server via IBM's Advanced Program-to-Program Communications.

Oracle supplies a client application called SQL*Net, which provides the protocol conversion to enable an SQL request generated by an Oracle application running on a microcomputer to be processed by an Oracle data base server running on a mainframe.

Currently, the company sells Oracle Server software that runs under the Xenix operating system and supports links to Oracle client software via the Transmission Control Protocol/Internet Protocol.

However, in order to support more client applications, Oracle will release Oracle Server for OS/2 early next year. This server software will use OS/2's Named Pipes to provide the link between the client and server on LAN Manager-based nets.

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AT&T gives look at merged System 75/85

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features of each PBX in the prototype," the spokeswoman said. "We are keeping the System 85's strong call-processing capability and the System 75's circuit packs."

The System 85 processor is the heart of the prototype. The processor was designed to handle only basic call processing. It offloads other tasks such as messaging to several smaller PBX processors, she said.

The prototype shown to the users groups consisted of a System 85 processor linked to a prototype cabinet called a Universal Module similar to the one used by the System 75. Line cards used with the Universal Module are also similar to those used by the System 75.

A System 75 user that wanted to expand its switch to support 1,000 lines would need to add a Universal Module, new circuit packs and a System 85 processor. No other changes would be needed, according to the spokeswoman.

The attendees' top concern was system compatibility, according to Edward Fontenot, president of the System 85 Users Group and technology and operations vice-president for Rockefeller Group Telecommunications Services, Inc. in New York. "None of us wants to be using a system and have the vendor introduce a new product line that makes the switch we have obsolete," he said.

The merged System 75/System 85 "will protect between 80% and 99% of our investment." Fontenot said. "It's not a perfect world, and we know AT&T cannot protect every penny we spend. If I can save 80% of my investment [in PBX equipment], I'm a hero in my company."

According to Lawrence Vangoethem, the president of the National System 75 Users Group, "AT&T is starting to deliver on its long-standing promise to develop a product that would combine the best of the two PBXs in one box.

"Having the prototype here is encouraging," said Vangoethem, who is director of systems support and corporate telecommunications for Sara Lee Corp. in Chicago. "There had been a great deal of conjecture in the industry about what this [switch] might look like. But, there are still some major issues that need to be resolved."

AT&T would not discuss prototype development plans or pricing for the merged switch, and it skirted users' compatibility questions. "AT&T is aware of these issues and will eventually address them. And that's encouraging," Vangoethem said. "They asked for our input on the prototype and are trying to involve us in the [product development] process."

Novell stages intro of gateway at Comdex

continued from page 2

The gateway product includes NetWare 3270 LAN Workstation software, which runs on network-attached microcomputers. The software enables NetWare-attached microcomputers to run up to five concurrent IBM 3178, 3278 or 3279 terminal-emulation sessions. The package also makes microcomputer-attached printers appear to an IBM host as an IBM 3287 printer.

NetWare 3270 LAN Workstation software communicates with the gateway using Novell's Sequence Packet Exchange or IBM's Network Basic I/O System protocol.

The gateway software also boasts a diagnostic feature that makes the gateway device appear to NetWare-attached microcomputers as an IBM mainframe. This enables network managers to quickly determine whether the Novell network or the host is at fault for failed terminal-emulation sessions.

A second diagnostic feature lets users establish a gateway connection to a Novell host free of charge to test whether the gateway software is functioning properly.

NetWare SNA Gateway software is priced at $2,995, and NetWare SNA Gateway ELS costs $595. An unlimited number of copies of the NetWare 3270 LAN Workstation software are free to users who purchase NetWare SFT Version 2.1 and $995 for others. Novell's adapter boards range in price from $395 to $1,100.

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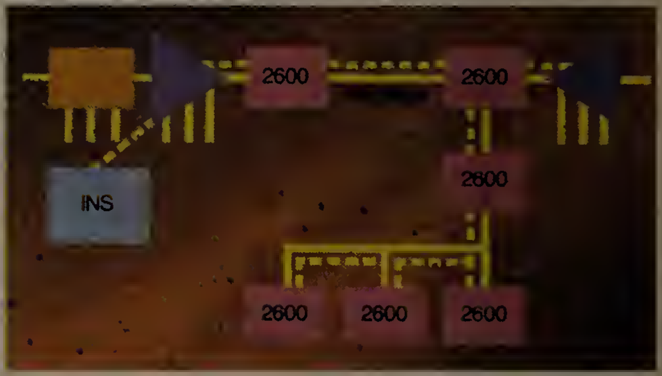

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